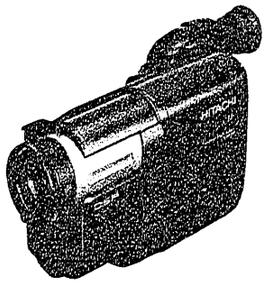
HITACHI

SERVICE MANUAL

TK No.6505E

VM-E110A/E310A
VM-E410A/E510A

TH MECHANISM



Manuals related to the VM-E110A/E310A/E410A/E510A

This model uses a TH MECHANISM.
Refer to the following manual for the TH MECHANISM.

Name of manual	Manual No.
TH MECHANISM	6406E
VM-AC84A	6509E

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SPECIFICATIONS AND PARTS ARE SUBJECT TO CHANGE FOR IMPROVEMENT

8mm VIDEO CAMERA/RECORDER

April 1995 Video & Personal Media Systems Division, Tokai Operation

CAUTION (COLOR LCD EVF)

LCD display; the liquid crystal display (LCD) panel is mode by highly precise technology. More than 99.99% of its picture elements (pixels) are effective, but some (less than 0.01%) may appear as colored bright dots. This does not indicate a fault as the LCD panel stretches the limits of current technology.

CAUTION (CRT EVF)

Be carefull of the section painted in white on the electronic viewfinder circuit board as it generates a high voltage.

SAFETY PRECAUTIONS

The following precautions should be observed when servicing.

1. Since many parts in the unit have special safety-related characteristics, always use genuine Hitachi replacement parts. Especially critical parts in the power circuit block should not be replaced with other makers'. Critical parts are marked with ⚠ in the schematic diagram.
2. Before returning a repaired unit to the customer, the service technician must thoroughly test the unit to ascertain that it is completely safe to operate without any danger of electrical shock.

X-RAY RADIATION

The primary source of X-ray radiation in this viewfinder is the picture tube. The tube used in this viewfinder is specially constructed to limit X-ray radiation emission. For continued X-ray radiation protection, the replacement tube must be the same type as the original, Hitachi approved one.

How to discriminate the "TYPE" identifications in the service manual

The parts and circuits are identified by "TYPE" in this manual to discriminate the differences between models. The TYPE numbers are the same as the model numbers. The table below shows how to read the TYPE identifications.

TYPE identification		Model name
TYPE 110	→	VM-E110A
TYPE 310	→	VM-E310A
TYPE 410	→	VM-E410A
TYPE 510	→	VM-E510A

Differences table of main features

Model name	Nor-8	Hi-8	STEREO	MONO	EIS	FADE	16:9 CINEMA	WIND CUT DET	W/B EVF	C.EVF
VM-E110A	○	–	–	○	×	×	×	×	○	
VM-E310A	○	–	–	○	×	×	×	×		○
VM-E410A	○	–	–	○	○	○	○	○	○	
VM-E510A	○	–	–	○	○	○	○	○		○

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Specifications

General Specifications

Power requirements	6V DC
Power consumption	VM-E410A: 4.8W (when recording) VM-E510A: 5.4W (when recording)
Dimensions	3-11/16" W x 4-12/16" H x 8-5/16" D (94mm x 120mm x 211mm)
Weight	VM-E410A: 1.91lbs(866g) without battery pack, lens hood, lens cap or cassette VM-E510A: 1.88lbs(855g) without battery pack, lens hood, lens cap or cassette
Operating temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage temperature	-4°F ~ 140°F (-20°C ~ 60°C)

Video Recorder Specifications

Format	8mm
Record/playback	Two video record/playback heads
Video signal	EIA standard NTSC color
Tape speed	14.3mm/sec
Video input	1.0Vp-p, 75 ohm
Video output	1.0Vp-p, 75 ohm
Audio input	-7.8dBs (316mVrms)
Audio output	-7.8dBs (316mVrms)
Fast forward/rewind time	Less than 8 minutes with P6-120 cassette

Camera Specifications

Scanning	525 lines/60 fields/30 frames
Required minimum illumination	1lux
Pickup device	1/4" C.C.D.
Lens diameter	46mm

COMPARISON OF FEATURES

⇦ : SAME AS LEFT

	ITEM	VM-E110A	VM-E310A	VM-E410A	VM-E510A	VM-E52A	VM-E58A
GENERAL	POWER REQUIREMENTS	6.0V DC	⇦	⇦	⇦	⇦	⇦
	POWER CONSUMPTION	4.7Watts (when recording)	5.3Watts (when recording)	4.7Watts (when recording)	5.3Watts (when recording)	4.7Watts (when recording)	5.6Watts (when recording)
	DIMENSIONS (W×H×D mm)	94×120×211	⇦	⇦	⇦	91×116×214	⇦
	WEIGHT (gr)	Approx. 866	Approx. 855	Approx. 866	Approx. 855	Approx. 740	Approx. 755
	OPERATION TEMPERATURE/HUMIDITY	32° F ~ 104° F	⇦	⇦	⇦	⇦	⇦
	STORAGE TEMPERATURE	-4° F ~ 140° F	⇦	⇦	⇦	⇦	⇦
VIDEO	FORMAT	8mm	⇦	⇦	⇦	⇦	⇦
	RECORD/PLAYBACK SYSTEM	2 HEADS + Flying Erase HEAD	⇦	⇦	⇦	⇦	⇦
	TAPE SPEED	SP : 14.3mm/sec	⇦	⇦	⇦	⇦	⇦
	F.F/REW TIME	Less than 8minutes With P6-120 cassette	⇦	⇦	⇦	⇦	⇦
	HEAD WEEL	40mm	⇦	⇦	⇦	⇦	⇦
	BASIC CHASSIS TYPE	TH MECHANISM	⇦	⇦	⇦	⇦	⇦
	AUTO HEAD CLEANING	NO	⇦	⇦	⇦	⇦	⇦
CAMERA	REQUIRED MINIMUM ILLUMINATION	1 lux	⇦	⇦	⇦	⇦	⇦
	CAMERA DEVICE	1/4" C.C.D	⇦	⇦	⇦	1/3" C.C.D	⇦
	LENS DIAMETER	46mm	⇦	⇦	⇦	⇦	⇦
	ZOOM RATIO/APERTURE	12 : 1 (4mm - 48mm) / f1.6	⇦	⇦	⇦	12 : 1 (5mm - 60mm) / f1.8	⇦
	ZOOM SPEED	1 SPEED	⇦	⇦	⇦	⇦	⇦
OTHER FEATURES	ELECTRONIC VIEWFINDER	CRT (Black & White)	LCD (Color)	CRT (Black & White)	LCD (Color)	CRT (Black & White)	LCD (Color)
	ELECTRONIC IMAGE STABILIZER	NO	⇦	YES	⇦	NO	YES
	AI AUTO WHITE BALANCE	YES	⇦	⇦	⇦	⇦	⇦
	DIGITAL SIGNAL PROCESSOR	YES	⇦	⇦	⇦	⇦	⇦
	ELECTRICAL ZOOM	×36 (24 × INST.ZOOM1.5)	⇦	⇦	⇦	NO	×36 (24 × INST.ZOOM1.5)
	INSTANT (INST.) ZOOM	YES (×1.5)	⇦	⇦	⇦	NO	YES
	SUB REC BUTTON	NO	⇦	⇦	⇦	YES	NO
	AUTOFOCUS SYSTEM	VIDEO AF	⇦	⇦	⇦	⇦	⇦
	PROGRAMME AE (SHUTTER SPEED)	YES (Program AE only)	⇦	⇦	⇦	⇦	⇦
	TITLER	YES (2 LINE)	⇦	⇦	⇦	⇦	⇦
	S-CONNECTOR INPUT/OUTPUT	NO	⇦	⇦	⇦	⇦	⇦
	CAMERA LIGHT SHOE	YES	⇦	⇦	⇦	⇦	⇦
	MICROPHONE	MONAURAL	⇦	⇦	⇦	⇦	⇦
	MIC/EDIT IN JACK	NO/NO	⇦	⇦	⇦	⇦	⇦
	FADE	NO	⇦	YES	⇦	NO	YES
	DATE SEARCH	YES	⇦	⇦	⇦	NO	⇦
	16×9 MODE	NO	⇦	YES	⇦	NO	⇦
	WIND CUT SWITCH	NO	⇦	YES(AUTO)	⇦	NO	⇦
	MANUAL/AUTO FOCUS	SELECTIVE	⇦	⇦	⇦	AUTO MODE ONLY	SELECTIVE
ACCESS-ORIES	AC ADAPTER/CHARGER	VM-AC84A	⇦	⇦	⇦	VM-AC91A	VM-AC83A
	BATTERY PACK	VM-BP82	VM-BP82G	⇦	⇦	VM-BP82	⇦
	REMOTE CONTROL	VM-RME55A	⇦	VM-RME70A	⇦	VM-RME55A	VM-RME70A

COMPARISON OF MAIN CONTROL ICs

ITEM	VW-E110A/E310A/E410A/E510A		VW-E52A/E54A/E56A/E58A	
SENSOR/GYRO				
CCD SENSOR	ICX056AK	(IC1001)	ICX054AK	(IC1001)
GYRO(VERT.)	ENC-05EA-03	(IC1401)	ENC-05DA-01	(IC1411)
RESET(VERT.)	TC4W66F	(IC1404)	TC4W66F	(IC1404)
V.GYRO AMP	TLC2272	(IC1403)	XRA4510F	(IC1402)
GYRO(HORIZ.)	ENC-05EB-03	(IC1402)	ENC-05DB-01	(IC1511)
RESET(HORIZ.)	TC4W66F	(IC1404)	TC4W66F	(IC1504)
H.GYRO AMP	TLC2272	(IC1403)	XRA4510F	(IC1502)
SENSOR DRIVE				
CDS/AGC	HA118184F	(IC1101)	HA118184F	(IC1101)
A/D CONV.	HD49319F	(IC1102)	HD49319F	(IC1102)
DIGITAL PROCESS	HG51CS035F	(IC1103)	HG51B025TF	(IC1103)
DIGITAL ZOOM	———		HG51B139FG1	(IC1104)
DRIVE PULSE GEN.	μPD16510GR	(IC1104)	μPD16508GB	(IC1110)
D μP	HD6433042T01F	(IC1106)	HD6433378V11F	(IC1105)
EEP-ROM	S-2939G1F	(IC1107)	S2939GIF	(IC1106)
AUTO FOCUS				
IRIS DRIVE	NJM3414	(IC1201)	NJM3414M	(IC1201)
IRIS MOTOR	NJM3403A	(IC1202)	NJM3403A	(IC1202)
GAIN SW	TC4S66FT	(IC1203)	TC4W66F	(IC1203)
AUTO FOCUS μP	———		SC78054GC021	(IC1301)
ZOOM MOTOR DRIVE	MPC17A85ZVM	(IC1301)	XPC17A85ZVM	(IC1302)
FOCUS MOTOR DRIVE	MPC17A85ZVM	(IC1302)	XPC17A85ZVM	(IC1303)
INV.	———		SN74HCT04ADB	(IC1308)
BUF.	HD74HCT244T	(IC1303)	HD74HCT125T	(IC1311)
SYSTEM CONTROL				
SYSTEM CONTROL μP	CXP87240A	(IC0901)	CXP80724	(IC0901)
LOADING MOTOR DRIVE	BA6477F	(IC0671)	BA6417F	(IC0603)
RESET PULSE GEN.	S84206F	(IC0902)	S84206F	(IC0902)
CHARA. GEN.	XLU5949AFS	(IC0904)	XLU5949AFS	(IC0904)
LEVEL SHIFT	HD74HCT125T	(IC0903)	HD74HCT125	(IC0903)
SERVO				
SERVO CONTROL	CXP87240A	(IC0901)	CXP80724	(IC0901)
ATF	UPC5023GS-079-E1	(IC0601)	XR10823CQ	(IC0601)
CAPST.MOTOR DRIVE	LB1881V	———	LB1881	———
CYL.MOTOR DRIVE	LB1885MA	(IC0631)	LB1885MA	(IC0602)
AUDIO/MIC AMP				
AUDIO PROCESS	HA118193F-01	(IC0401)	HA118176F	(IC0401)
MIC AMP	———		LA7471M	(IC0402)
DC-DC CONVERTER				
PWM	TL1464IPT	(IC0551)	TL1464	(IC0551)
PRE AMP				
HEAD SW	HA118189MPER	(IC0101)	HA118189MPER	(IC0101)
LUMINANCE/CHROMA				
LUMA/CHROMA PROCESS	HA118372AF	(IC0201)	HA118372F	(IC0201)
1H DELAY	CXL5516N	(IC0202)	CXL5502N	(IC0202)
CCD 1H DELAY	CXL5507M	(IC0203)	CXL5507M	(IC0203)
VIDEO AMP	MM1029AT	(IC0204)	MM1029AT	(IC0204)
OUTPUT SELECT	———		NJM2249M	(IC0205)
INPUT SELECT	———		NJM2249M	(IC0207)
CRT EVF				
VIDEO AMP./V.H DEFLECTION	HA118179F	(IC2001)	HA118179F	(IC2001)
LCD EVF				
EVF VIDEO PROCESS	IR3Y18	(IC2101)	IR3Y05	(IC2101)
PULSE GEN.	ETM3030T0A	(IC2202)	ETM3030T0A	(IC2202)
EVF PWM	———		FA7610N	(IC2181)

SERVICE MANUAL ABBREVIATION LIST

A	
ACC	Automatic Color Control
ACK	Automatic Color Killer
ADC B-Y	Analog to Digital Converted B-Y Signal
ADC R-Y	Analog to Digital Converted R-Y Signal
ADC Y	Analog to Digital Converted Luminance
ADD	Adder
ADRS	Address
A.DUB	Audio Dubbing
AF	Autofocus
AFC	Automatic Frequency Control
AGC	Automatic Gain Control
AGC KILLER	AGC Killer Voltage
ALC	Automatic Level Control
AIC	Automatic Iris Control
AM	Amplitude Modulation
AMP	Amplifier
APC	Automatic Phase Control
ASBL	Assemble (Phase Matching)
AUD.	Audio
AUX	Auxiliary
A5V	Always 5V B+ Source
B	
B (BLU)	Color Signal BLUE
BATT.	Battery
BF	Burst Flag
BG	Burst Gate or Back Ground
BGP	Burst Gate Pulse
BH	Power Supply for Selecting VHF High Band
BL	Power Supply for Selecting VHF Low Band
BLK	Blanking
BM	Power Supply for Selecting VHF Mid Band
BPF	Bandpass Filter
BS	Power Supply for Selecting VHF Super Band
BU	Power Supply for Selecting UHF Band
BU	Back-up
BUF.	Buffer Amplifier
B-YL	Battery
C	
C	Chroma
C (CHROMA)	Chrominance Signal
CAPST.	Capstan
CAS	Column Address Strobe
CARRI.	Carrier
CATV	Cable TV
C.BLANK	Chroma Blanking
C.BLK	Composite Blanking
CCD	Charge Coupled Device
CG	Character Generator
C.FG/CFG	Capstan Frequency Generater
C.FREE RUN	Chapstan Free Run
CH	Channel
CHD	Camera Horizontal Drive Pulse
CHAR.	Character
CHROMA	Chrominance
C.MEMORY	Counter Memory
CNR	Chroma Noise Reducer
COM.	Common
COM.	Composite
COMPA	Comparator
COMPE	Compensator
COMPO	Composite
COMP-EXP	Compressor-Expander
CONV.	Converter
CONT	Control
CORR.	Correlation
COUNT.	Counter
CP	Clamp Pulse
C.PAUSE	Camera Pause
C/R	Capacitor/Resistor
C.RESET	Counter Reset
C.REVERSE	Count Reverse
CST	Cassette

C	
C.SYNC	Composite Synchronizing Signal
CTL	Control Track Pulse (Control)
CYL	Cylinder
CY (CYAN)	Color Signal CYAN
D	
DA	Double Azimuth
D/A	Digital to Analog Converter
D-D	Direct Drive
DEEMPHA.	Deemphasis
DEF	Deflection
DEMOD.	Demodulator
DEMPX	Demultiplexer
DET	Detector
DIFF. AMP	Differential Amplifier
DISCRI.	Discriminator
DISP.	Display
DL	Delay Line
DN	Down
DO	Dropout
DOC	Dropout Compensator
DRAM	Dynamic Random Access Memory
D.REF 25/30	Delayed Reference 25/30Hz
D.SW 25/30	Delayed Switching 25/30Hz
DSP	Digital Signal Processor
DT/OE	Data Transfer/Output Enable
D/W	Dark/White
DWC	Delayed Write Clock
E	
EA-ROM	Electrically Alterable Read Only Memory
E-E	Electronic-to-Electronic
EMPHA.	Emphasis
EQ	Equalizer
EVF	Electronic Viewfinder
EXT.	External
F	
F.ADV	Frame Advance
F/V	Frequency-to-Voltage Converter
FB	Feed Back
FF	Flip Flop
F.FWD	Fast Forward
FG	Frequency Generator
FM	Frequency Modulation
FREQ.	Frequency
FRAME ADV	Frame Advance
Fsc	Color Sub Carrier Frequency
FWD	Forward
G	
GEN	Generator
GND	Ground
H	
H	Horizontal
HBF	Horizontal Burst Flag
HD	Horizontal Drive
Hi-Fi	High Fidelity
HLT	Halt
HPF	High-pass Filter
HPL	High-pass Limiter
HSS	Horizontal Sync. Separator
I	
IF	Intermediate Frequency
INC	Row Counter Increment
INDI.	Indicator
INT.	Internal
INV.	Inverter
I/O	In/Out (Input/Output)
IR	Infrared Rays
IRIS DET	Iris Detection
IRT	Instant Recording Timer
L	
LCD	Liquid Crystal Display
LIN.	Linear
LM	Loading Motor

L	
LNC	Line Noise Canceller
LOG	Logarithm
LP	Long Play
LP (H)	Long Play Signal (Active High)
LPF	Low-pass Filter
LUMA	Luminance
L/R	Left/Right
M	
MAN	Manual
M.BRAKE	Main Brake
M.CUT	Monitor Cut
MEM.	Memory
MEM ON	Memory ON
MEM SW	Memory Switch
MEM VIDEO	Memorized Video
MIX	Mixer
MMV	Monostable Multivibrator
MOD.	Modulator
MPX	Multiplex
MPX VIDEO	Multiplexed Video
M.STATE	Mechanism State
M.STOP	Memory Stop
MTS	Multi Channel Television Sound
N	
NEG	Negative
NFB	Negative Feed Back
NORM. or NOR.	Normal
NR	Noise Reduction
O	
OB	Optical Black
O/E	Odd/Even Field
OSC	Oscillator
OSD	On-Screen Display
P	
PB/PLAY	Playback
P.CONT	Power Control
PIF	Picture Intermediate Frequency
PG	Pulse Generator
P IN P	Picture in Picture
PIX MOVE	Picture Move
PLL	Phase Locked Loop
POS.	Positive
POWER CONT.	Power Control
PROG.	Program
PROTECT.	Protector
PWM	Pulse Width Modulation
R	
R (RED)	Color Signal RED
RAM	Random Access Memory
RAS	Row Address Strobe
RC	Reading Clock
RCC	Reading Clock Clear
RCR	Row Counter Reset
REC	Record
RECT.	Rectifier
REF	Reference
REF 25/30	Reference 25/30Hz from servo circuit
REG	Regulator
REL	Refresh Control
REW	Rewind
REV	Reverse
RF	Radio Frequency
RM	Reel Motor
ROM	Read Only Memory
R-YL	Color Difference Signal R-YL
S	
SAP	Second Audio Program
SAW	Sawtooth
SC	Serial Control
SC1 (0°)	3.58MHz Subcarrier Signal 1 (0-degree Phase Shifted)

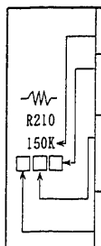
S	
SC2 (90°)	3.58MHz Subcarrier Signal 2 (90-degree Phase Shifted)
SEP.	Separator
SG	Signal Generator
S/H	Sample and Hold
SIF	Sound Intermediate Frequency
SOL	Solenoid
SP	Standard Play
SP/LP	Standard Play/Long Play
S.REEL	Supply Reel Sensor
SRCH	Search
SRV	Servo
STABI.	Stabilizer
S.TRACK	Slow Tracking
STBY	Standby Mode
S-VHS	Super VHS
SW 15Hz	15Hz Head Switching Pulse
SW 25/30Hz	25/30Hz Head Switching Pulse
SYNC	Synchronizing signal
SYS.CON	System Control
T	
T (TELE)	Telephoto Angle
T.BRAKE	Take-up Brake
T/L	Tuner/Line
TP	Test Point
T.REEL	Take-up Reel Sensor
T.RESET	Timer Reset
TRS	Transfer
TμP	Timer Microprocessor
TU-μP	Tuning Microprocessor
U	
U/D	Up/Down
UNI.	Unified
V	
V (VERT)	Vertical
VAR	Variable
V.AGC	AGC Voltage
VCA	Voltage Controlled Amplitier
VCO	Voltage Controlled Oscillator
V.DRV	Vertical Drive Pulse
V.DUB	Video Dubbing
V/F	Voltage to Frequency Converter
VHS	Video Home System
VF	Focus Voltage
VOL.	Volume
V-REF	Voltage Reference
VP	Vertical Pulse
VSS	Vertical Sync. Separator
Vss	Voltage Super Source
VT	Tuning Voltage
VT-U	Tuning Voltage-UHF
VT-V	Tuning Voltage-VHF
VCXO	Voltage Controlled Crystal Oscillator
W	
WC	Write Clock
WCC	Write Clock Clear
WE	Weighting
WHT	Color Signal WHITE
WIDE	Wide Angle
WHD	Wide Horizontal Drive
WHT BAL CONT.	White Balance Control
Y	
Y	Luminance Signal
Y/C	Luminance/Chrominance
YE (YEL)	Color Singal YELLOW
YL	Luminance Signal (Low Component)
ANOTHER	
μP	Microprocessor
5V	ON 5V B+ Source
9V	ON 9V B+ Source

WHEN USING THIS SERVICE REFERENCE MATERIAL

1. How to Read Abbreviations

Values, dielectric resistances (power capacitances), tolerances, grades of resistors (excluding variable resistors, etc.) and capacitors are indicated in the schematic diagrams using abbreviations. Collate these abbreviations and the following tables to read abbreviations and replace parts correctly.

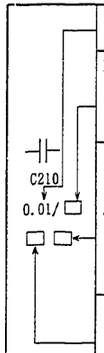
[RESISTORS]



Value	No indication ····· ohm K ····· kohm
Tolerance	No indication ····· ± 5% K ····· ±10% M ····· ±20%
Power capacitance	No indication ····· 1/8W (All capacitances other than 1/8W are indicated in schematic diagrams with W omitted.)
Type	No indication ·· Carbon film fixed RC ····· Carbon solid RW ····· Power-type wire wound solid RS ····· Metal oxide film solid RN ····· Metal film solid

Example
R210
150K ····· 150 kohm, carbon solid
RC.1/2.K 1/2W, ±10%

[CAPACITORS]



Value	No indication ····· μF P ····· PF
Dielectric resistance	No indication ····· 50WV (All resistances other than 50WV and those of electrolytic capacitors are indicated with WV omitted.)
Tolerances	No indication ····· ±10% J ····· ± 5% M ····· ±20% C ····· ±0.25PF Z ····· +80%−20% (No indication for electrolytic capacitors. (excluding tantalum and high stability electrolytic capacitors.)
Type	No indication ··· Ceramic, general electrolytic (see circuit symbol to distinguish from ceramic.) MYL ····· Mylar (Polyester film) STY ····· Styrol TA ····· Tantalum KU ····· High stability electrolytic MP ····· Metallized paper

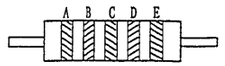
Example
C210
0.01/25 ····· Mylar, 0.01μF, 25WV
MYL.J ±5%

2. Markings in Schematic and Circuit Board Diagrams

(1) Parts with marks "■" attached to circuit numbers in the schematic and circuit board diagrams are discrete components.
(2) Parts with marks "●" attached to circuit numbers in the schematic and circuit board diagrams are chip components.
(3) Parts with marks Ⓩ in the circuit board diagrams are leadless jumpers.

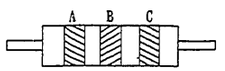
3. How to Read Capacitance of Resistance-Type Capacitors and Coils

[CAPACITOR]



CAPACITY : (10A+B)×C (PF)
TOLERANCE : D
RATED VOLTAGE : BODY COLOR
PINK : 25V
GREEN : 50V
CHARACTERISTICS : E

[COIL]



INDUCTANCE : (10A+B)×C (μH)

COLOR	A, B	C	D	E
Black	0	10^0	±20%	For temperature compensation
Brown	1	10^1		
Red	2	10^2		
Orange	3	10^3		
Yellow	4	10^4		
Green	5	10^5		
Blue	6			
Violet	7			
Gray	8		±30%	High dielectric constant type
White	9			For temperature compensation
Gold		10^{-1}	± 5%	
Silver		10^{-2}	±10%	High dielectric constant type

4. Cautions on Use of MOS ICs

(1) MOS ICs are inserted in black foam for shipment. This foam is a conductor which short-circuits between the leads to prevent damage. Do not remove ICs from this foam during storage. Avoid removing ICs from this foam, placing them on plastic which is likely to be charged with static electricity or inserting them into styrol foam.
(2) High voltages may be applied during soldering caused by leakages from the soldering iron. Be sure to ground the tip of the soldering iron or use a low voltage soldering iron.
(3) The human body and clothes made of synthetic fiber or nylon gloves may be charged with several thousand volts of static electricity because of friction. Workers should be grounded.

LEADLESS (CHIP) COMPONENT IDENTIFICATION

1. Leadless Transistor

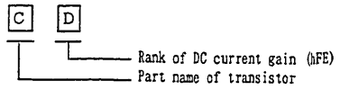
The part name of a leadless transistor is indicated by a code on its surface, using one letter, one letter and one numeral, two letters, two letters and one numeral, two numerals, two numerals and one letter, three letters, or four letters.

Note: There are transistors with the same code but different part names, or with the same part name but different codes. Refer to the parts lists to finally identify a transistor.

CODE	PART NAME	CODE	PART NAME
Leadless (Chip) Transistor			
3925	2SC3925	BR	2SC2412K
1CQ	2SB902	BR	2SC4617
1D	2SC3127	BS	2SC2412K
1DS	2SD1328S	C-7	2SA811
1DT	2SD1328	C1G	KSC1623
1R	2SB970TX	CB	2SC3646
2BQ	2SK374PQ	CC	2SA1122C
2BR	2SK374QR	CC	2SC3647T
2Y	2SC3757	CC	2SC3647
2YQ	2SC4691	CD	2SA1122D
3N	2SK620	CE	2SA1122E
4N	XN5601	CK	2SD999
4Q	XN1B301	CP	2SC4097
4R	XN1C301	CQ	2SC2411K
5C	XN4601	CR	2SB710
5C	XP4601	CR	2SC2411
5H	XP4501	CR	2SB1219
5H	XN4501	D16	2SC1622A
5K	XP4401	D17	2SC1622A
5K	XN4401	D18	2SC1622A
5L	XN5501	DB	2SD1766
5N	XN6501	DE	2SC2463
5O	XN6401	DF	2SD1623
5R	XP1501	DF	2SD1898
5R	XN1501	DG	2SD1624
5S	XN1504	DK	2SB798
5V	XN1401	EC	2SA1022
5W	XN2501	F-2	2SC1009F2
5X	XN4504	F-3	2SC1009F3
7R	XN2401	F-4	2SC1009F4
7S	XN1601	FC	2SC2619
AA	2SD1757K	FR	2SA1774
AKQ	2SA1738	FR	2SA1037K
AKQ	2SA1806	FR	2SA1576R
AL	2SA1791	FS	2SA1037K
AM	2SC4656	GC	2SC2734
AO	2SB709AQR	GM	3SD1615
AQ	2SB709AQ	HQ	2SA1036K
AQ	2SB766	IC	2SC3016
AR	2SB1462	IRD	2SA1484
AR	2SB766	IS	2SB792S
AR	2SB709ARS	IT	2SB792T
AR	ASB1218R	L-4	2SC1623L4
AS	2SB766	L-5	2SC1623L5
AS	2SB709AS	L-6	2SC1623L6
B3	2SC1621B3	L-6	2SC2812L6
B4	2SC1621B4	L-7	2SC2812L7
BC	2SB1188	L5	MMBC1623L5
BD	2SB1121	L6	MMBC1623L6
BE	2SB1260	LB	2SC2462B
BF	2SB1123	LC	2SC2462C
BF	2SB1308	LD	2SC2462D
BG	2SB1124	LR	2SC2412KLN
BH	2SB1001	M-5	2SA812
BQ	2SB709A	M-6	2SA1179
BR	2SC4081R	MC	2SA1052MC
MD	2SA1052MC-D	ZS	2SD874S
N3	2SC1653	VR	2SD968A
ND	2SD1306ND	W1	FMW1
NE	2SD1306NE	W10	FMW10
PD	2SA1171D	W2	FMW2
PS	2SD814	W3	FMW3
QB	2SC2620QB	WR	2SD602
QC	2SC2620QC	X1	UMX1
QO	2SC2714	X1	IMX1
R22	2SC4226	X2	IMX2
R22	2SC3356	Y1	FMY1
R32	2SC4227	Y12	2SA1464
R34	2SC3583	Y25	NTM3906
R42	2SC3585	Y3	FMY3
RB	2SC2618RB	YCD	2SK197
RC	2SC2618RC	YI	2SA1666
RK	2SC3357	YQ	2SD601YQ
S1	FMS1	YR	2SD601YR
S2	FMS2	YR	2SD1819R
SC	2SA1121	YR	2SD2216
SO	2SA1162	YS	2SD601YS
SP	2SC3082K	Z1	IMZ1
T1	IMT1	Z2	IMZ2
T1	UMT1	ZO	2SD874T
T2	IMT2	ZQ	2SD601A
UD	2SC2404	ZR	2SD874R
Digital Transistor			
3	DTC143TK	6C	UN9113
4	DTC114TK	6S	XP4113
6	DTC144TK	8B	UN5212
13	DTA143EK	8C	UN9213
14	DTA144EK	8C	UN2213
15	DTA124K	8S	XP4213
15	DTA124EU	9L	XP1213
16	DTA144EU	9L	XN1213
16	XDA144EK	A1	FMA1
16	DTA144EE	A1	UMA1
23	DTC143EK	A2	FMA2
24	DTC114EU	B2	UMB2
24	DTC144EK	B2	IMB2
25	DTC124EU	C2	FMC2
25	DTC124K	C5	FMC5
26	DTC144EE	D2	IMD2
26	DTC144EU	F52	DTB123
26	XDC144EK	G1	FMG1
33	DTA143XK	G2	FMG2
43	DTC143XK	G21	DTD113ZK
52	DTA123YK	G5	FMG5
60	UN511F	H03	DTC343TK
64	DTC114YK	H2	IMH2
80	UN521F	H2	UNH2
4P	XN1A312T	H27	DTC363EK
6B	UN5112	R04	KSR1104
6C	UN2113	R31	FP1L2Q
FET			
30	2SK621	WS	2SK322T
1FQ	2SK321FQ	WT	2SK322T
1FR	2SK321FQR	X15	2SK425
1KP	2SK316	X4	2SK94
2BQ	2SK663	XAF	2SK980FG
DY	2SK1579	YC	2SK197YC
JO	2SK208	YD	2SK197YD
K	3SK166	YE	2SK197YE
K4	2SK160K4	ZD	2SK217ZD
K5	2SK160K5	ZE	2SK217ZE
KB	2SK323		

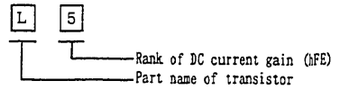
(1) Identification with two letters
Use this code and the following chart for transistor identification.
Example :

Code	Part name
CD	2SA1122D
LD	2SC2462D



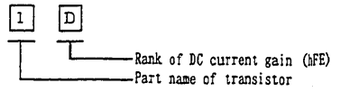
(2) Identification with one letter and one numeral
Use this code and the following chart for transistor identification.
Example :

Code	Part name
L5	2SC1623(5)
L6	2SC1623(6)



Example :

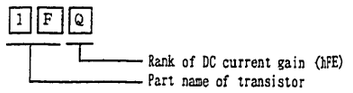
Code	Part name
1D	2SC3127D



Note: Codes S1,S2,T1,W1,W2,W3,X1,Y1,Y3,Z1 and Z2 encode only the part names.

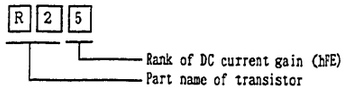
(3) Identification with one numeral and two letters
Use this code and the following chart for tarnsistor identification.
Example :

Code	Part name
1FQ	2SK321Q



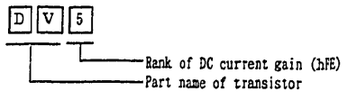
(4) Identification with one letter and two numerals
Use this code and the following chart for transistor identificaion.
Example :

Code	Part name
R25	25C3356



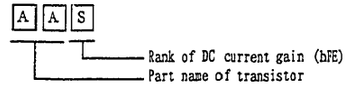
(5) Identification with to letters and one numeral
Use this code and the following chart for transistor identification.
Example :

Code	Part name
DV5	2SD596



(6) Identification with three letters
Use this code and the following chart for transistor identification.
Example :

Code	Part name
AAS	2SD1757KS



2. Leadless Diode
The part name of a leadless diode is indicated by a code on the surface, using one letter and one numeral, two letters, two letters and one numeral, two numerals and one letter, or three numerals. Use this code and the following table to identify the part name of a diode.

Note: Refer to the parts lists to finally identify a diode.

CODE	PART NAME	CODE	PART NAME
Diode			
0	HVU300A	3D	RB715F
1.0	1SV201	3.0L	MA3030L
2.0	MA3020	3.6L	MA3036L
5.1	MA3051L	3.9L	MA3039L
5.1	MA3051M	4.3H	MA3043H
6.8	MA3068	4.3L	MA3043L
6.8	MA3068M	4.3M	MA3043M
7.5	MA3075L	4.7L	MA3047L
8.2	MA3082M	4.7M	MA3047M
9.1	MA3091	5.1H	MA3051H
20	HZM6	5.1L	MA3051L
24	1SV221	5.1M	MA3051M
27	RD2.7M B	5.6M	MA3056M
30	RD3.0M B	6.2L	MA3062L
51	RD5.1M B2	6.2M	MA3062M
56	RD5.6M B	6.8H	MA3068H
91	RD9.1M B	6.8L	MA3068L
102	RD10M B2	6.8M	MA3068M
122	RD12M B2	6.8M	MA3068
163	RD16M B3	7.5H	MA3075H
182	RD10M B2	7.5L	MA3075L
271	RD2.7M B	8A	UN221D
272	D2.7M B2	8.2H	MA3082H
301	RD3.0M B	8.2M	MA3082M
362	D3.6M B2	9.1M	MA3091M
391	D3.9M B1	9.1M	MA3091
512	RD5.1M B2	10L	MA3100L
561	RD5.6M B	10M	MA3100M
621	RD6.2M B1	11L	MA3110L
681	RD6.8M	12M	MA3120M
683	RD6.8M B3	13H	MA3130H
911	RD9.1M B	18M	MA3180M
2.7H	MA3027H	36M	MA3360
Zener Diode			
1A	MA110	M3A	MA199
A3	1S2835	MC	MA153
A4	HSM2836C	MC	MA143
A5	1S2837	MH	MA141K
A6	HSM2838C	MH	MA151K

CODE	PART NAME	CODE	PART NAME
Zener Diode			
B	SBO505CP	MH	MA152K
B64	SFPB64	M1	MA132K
B74	SFPB74	MN	MA141WA
BE	1SV172	MN	MA152WK
C1	HSM88S	MN	MA151WA
C2	HSM276S	MO	MA132WA
C3	1SS226	MO	MA152WA
C4	HSM88WK	MP	MA133
F7	KV1470	MT	MA151WK
H5	HVM14	MT	MA141WK
J	SBO7-03C	MU	MA132WK
K	DA221	MU	MA151WA
M1A	MA159	N	DAN222
M1C	MA158	N	DAN202T
M1M	MA721	NU	MA152WK
M1N	MA713DAT	P	DAP202T
M1P	MA714	S4	D1FS4
M2A	MA122	SA	SB10-05P
M2B	MA123	Z	DA106K

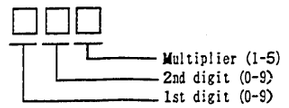
3. Leadless Resistor
The resistor value is indicated on its surface, using three numerals, or one letter and one numeral.

(1) Identification with three numerals
Read this code following the same procedure as when reading the color code on discrete resistors.

Example :

code	value
330	33 x 10^0 = 33 ohms
561	56 x 10^1 = 560 ohms
123	12 x 10^3 = 12K ohms
1R2	1 + 0.2 = 1.2 ohms

(R : Decimal point)

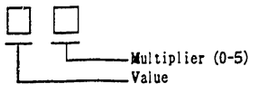


(2) Identification with one letter and one numeral
Use this code and the following chart for resisitor identification.

Letter	Value	Letter	Value	Letter	Value
A	1	J	2.2	S	4.7
C	1.2	L	2.7	U	5.6
E	1.5	N	3.3	W	6.8
G	1.8	Q	3.9	Y	8.2

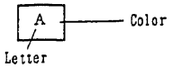
Example :

code	value
A1	1 x 10^1 = 10 ohms
G2	1.8 x 10^2 = 180 ohms
L3	2.7 x 10^3 = 2700 ohms
S4	4.7 x 10^4 = 47K ohms
W5	6.8 x 10^5 = 680K ohms



4. Leadless Capacitors
The capacitor value is indicated on its surface, using body color and one letter, or one letter and one numeral.

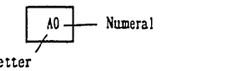
(1) Identification with body color and one letter



Body Color	Letter	Value	Body Color	Letter	Value
Red	A	1(PF)	Blue	A	100(PF)
	C	2		C	120
	E	3		E	150
	G	4		G	180
	J	5		J	220
	L	6		L	270
	N	7		N	330
	Q	8		Q	390
	S	9		S	470
Black	A	10(PF)		U	560
	C	12		W	680
	E	15		Y	820
	G	18	White	A	0.001(μF)
	J	22		E	0.0015
	L	27		J	0.0022
	N	33		L	0.0027
	Q	39		N	0.0033
	S	47		S	0.0047
	U	56		W	0.0068
	W	68	Green	A	0.01(μF)
	Y	82		E	0.015
				J	0.022
				N	0.033
				S	0.047
				U	0.056
				W	0.068
				Y	0.082
			Yellow	A	0.1(μF)

Example : Color	Letter	Value
Red	A	1PF
Black	A	10PF

(2) Identification with one letter and one numeral



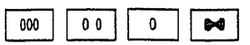
Letter/Numeral	Value	Letter/Numeral	Value
A0	1(PF)	A2	100(PF)
H0	2	C2	120
M0	3	E2	150
d0	4	G2	180
f0	5	J2	220
m0	6	L2	270
n0	7	N2	330
t0	8	Q2	390
y0	9	S2	470
A1	10(PF)	U2	560
C1	12	W2	680
E1	15	Y2	820
G1	18	A3	0.001(μF)
J1	22	E3	0.0015
L1	27	J3	0.0022
N1	33	N3	0.0033
Q1	39	S3	0.0047
S1	47	W3	0.0068
U1	56	A4	0.01(μF)
W1	68	E4	0.015
Y1	82	J4	0.022
		N4	0.033
		S4	0.047
		U4	0.056
		W4	0.068
		A5	0.1

Example :

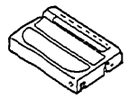
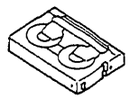
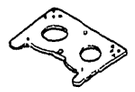
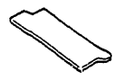
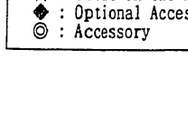
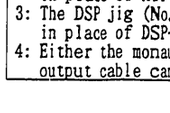
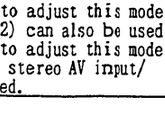
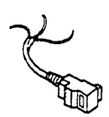
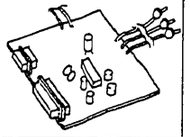
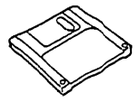
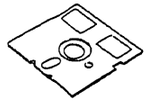
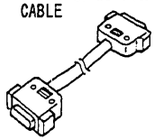
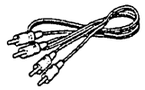
Letter/Numeral	Value
A0	1PF
A1	10PF

5. Leadless Jumper
The leadless jumper is indicated as shown below.

(1) (2) (3) (4)



JIGS AND TAPES FOR ADJUSTMENT

1. ALIGNMENT TAPE COLOR BAR/400Hz (20HSC-2) No.7099231 	2. CASSETTE TORQUE METER SRK-8T-132 No.7099235 SRK-8T-112 No.7099385 	3. MASTER PLANE No.7099237 	4. REEL DISK HEIGHT JIG No.7099238 
5. SPECIAL DRIVER No.7099239	6. ATF-R JIG (SW3:ON) No.7099461	7. C12 LIGHT BALANCE FILTER 46mmϕ No.7099369	※8. 3-PIN EXTENSION CABLE No. 7069113
9. 2-PIN EXTENSION CABLE No.7069038 	※10. 8-PIN EXTENSION CABLE No.7069115	11. 10-PIN EXTENSION CABLE No.7069039 	12. 9-PIN EXTENSION CABLE No.7069040 
※13. 20-PIN EXTENSION CABLE No.7069112	14. DSP AV OUTPUT JIG No.7099456 	15. DSP-R JIG No.7099448 	※16. ADJUSTMENT FLOPPY DISK (3.5 inch) No. 
※17. ADJUSTMENT FLOPPY DISK (5 inch) No. 	★18. PERSONAL COMPUTER	★19. PERSONAL COMPUTER 9-PIN or 25-PIN CABLE 	◎20. AV OUTPUT CABLE 
◆18. AV INPUT CABLE			

MARKS
- ※ : New jigs and tools
- ★ : Goods on the Market
- ◆ : Optional Accessory
- ◎ : Accessory

NOTE
1: Always set SW3 on the ATF-R jig to ON.
2: The ATF jig (No.7099386) can also be used in place of ATF-R jig to adjust this model.
3: The DSP jig (No.7099442) can also be used in place of DSP-R jig to adjust this model.
4: Either the monaural or stereo AV input/output cable can be used.

HOW TO USE THE EXTENSION CABLE

No.	NAME OF EXTENSION CABLE	PARTS No.	HOW TO USE (PURPOSE OF USE)
8	3-PIN EXTENSION CABLE	7069113	• For power supply. (Blue: Negative, Yellow:Positive) • Power supply cable after the case removed.
9	2-PIN EXTENSION CABLE	7069038	• Installed between the VCA circuit board and loading motor.
10	8-PIN EXTENSION CABLE	7069115	• Installed between the VCA and DCS circuit boards. —NOTE— Do not use this extension cable for "(1) Power Shutoff Level Adjustment" in the VCR adjustment section.
11	10-PIN EXTENSION CABLE	7069039	• Installed between the VCA circuit board and cylinder. —NOTE— Using this extension cable causes noise to occur in the playback picture. This cable is used to check voltage and waveforms. Check the picture quality in the regular connection state.
12	9-PIN EXTENSION CABLE	7069040	• Installed between the VCA circuit board and capstan motor.
13	20-PIN EXTENSION CABLE	7069112	• Installed between the SPE and VCA circuit boards.

ADVICE: When connecting an extension cable, it is convenient that you use a remote control to operate the camera/recoder.

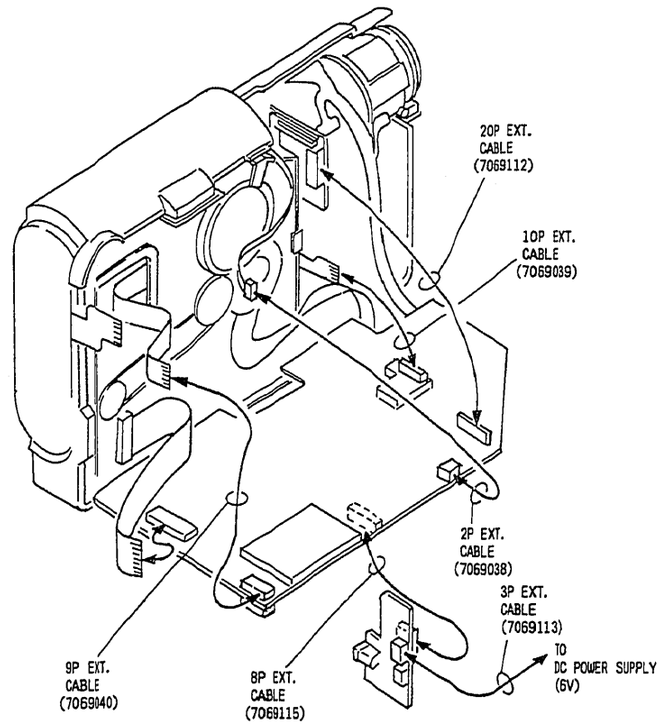

20P EXT. CABLE (7069112)
10P EXT. CABLE (7069039)
2P EXT. CABLE (7069038)
3P EXT. CABLE (7069113)
TO DC POWER SUPPLY (6V)
9P EXT. CABLE (7069040)
8P EXT. CABLE (7069115)

Fig. 1-1 Extension Cable Connection Diagram

MAINTENANCE/INSPECTION PROCEDURE

1. Required Maintenance

The recording density of a VCR is much higher than that of an audio tape recorder. VCR components must be very precise to ensure compatible with other VCRs. If any of these components are worn or dirty, the symptoms will be the same as if the part is defective.
To ensure a good picture, periodic inspection and maintenance, including replacement of worn-out parts and lubrications, is necessary.

2. Scheduled Maintenance

Schedules for maintenance and inspection are not fixed because they vary greatly according to the way in which the customer uses the VCR, and the environment in which the VCR is used. But, in general home use, a good picture will be maintained if the inspection and maintenance is done every 500 hours. Table 1 shows the relation between time used per day and inspection period.

Table 1

Average hours used per day	When inspection is necessary: About 6 months	About 9 months	About 18 months
One hour	↓	↓	↓
Two hours			
Three hours			

3. Check before starting Repairs

The faults occurring in the playback picture as shown in Table 2 can be remedied by cleaning and oiling. Check the need for lubrication and the conditions of cleanliness in the unit.
Check with the customer to find out how often the unit is used. If from that you determine that the unit is ready for inspection and maintenance, check the parts shown in Table 2.

Table 2

Phenomenon	Inspection Location
Poor S/N, no color	Dirt on video head or worn video head
Tape does not run or tape is slack	Dirt on pressure roller, cylinder or in tape transport system
Vertical jitter	Dirt on video head or in tape transport system
Low volume or sound distorted	Dirt on video head or worn video head

4. Tools Needed for Inspection and Maintenance

(1) Head cleaning kit
(2) VCR oil and grease (Table 3)
(3) Alcohol
(4) Gauze
(5) Cleaning tape [Maxell 8M-CL MCA (dry type)]

Table 3 Locations for Greasing and Oiling

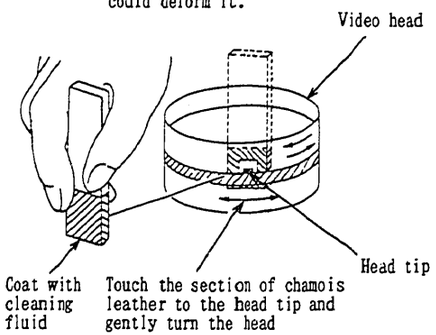
Name	Oil or Greasing Location
Sonic Slidas Oil (#1600)	Oil low-speed rotating sections
Froil (G31-SA)	Lubricate metal or molded section under light load
Molicoat (PG-641)	Lubricate metal or molded sections under light load
Lock paint	Fix adjustment screws and nuts.

5. Maintenance Procedures

5-1 Cleaning

(1) Cleaning video head
First use a cleaning tape. Be sure to use the specified cleaning tape and read its instruction sheet carefully before using it. If dirt on head is too stubborn to remove by tape, use the cleaning kit. Moisten the cleaning stick with cleaning fluid at the point indicated.
Touch the stick to the head tip and gently turn the head (rotating cylinder) to the right and left. (Do not move the stick vertically and make sure that only the chamois leather on the stick comes into contact with the head. Otherwise, the head may be damaged.) Thoroughly dry the head. Then test run a tape.
If cleaning fluid remains on the video head, the tape may be damaged when it comes into contact with the head surface.

(2) Cleaning the tape transport system and drive system, etc.
Wipe with gauze moistened with alcohol.
Notes: 1) The tape transport system is the system which comes into contact with the running tape. The drive system consists of those parts which run the tape.
2) Make sure that during cleaning you do not touch the tape transport system with the tip of a screwdriver and that no force is applied to the system that could deform it.


Video head
Head tip
Coat with cleaning fluid
Touch the section of chamois leather to the head tip and gently turn the head

5-2 Lubrication

(1) Guide lines for lubricating with oil
Use the oiler to apply one or two drop of Sonic Slidas oil. Make sure not to use too mach oil because it may spill over or leak out coming into contact with rotating parts and causing slippage or other problems. If too much oil is applied, wipe clean with alchohol.

(2) Periodic oil lubrication
Lubricate the specified locations only when replacing components. Refer to the exploded views for the lubricating locations.

5-3 Greasing

(1) Greasing guidelines
Apply grease Froil or Molicoat, with a stick or brush. DO not use excess grease. It may come into contact with the tape transport or drive system. Wipe any excess and clean with gauze moistend with alcohol.

(2) Periodic greasing
Grease the specified locations only when replacing components. Refer to the exploded views for the greasing locations.

Table 4 Parts to be Maintained/Inspected and Maintenance/Inspection Schedules

Caution: The following table does not apply to all units. The maintenance/inspection schedules depend on how the unit is used and the environment in which it is used.

Component \ Hours	500	1000	1500	2000	2500	3000
Video heads (cylinder assembly)	C	C/R	C	C/R	C	C/R
Supply guide roller	C	C	C	C	C	C
Supply guide pole	C	C	C	C	C	C
Take-up guide roller	C	C	C	C	C	C
Pull-out pole	C	C	C	C	C	C
Tension pole	C	C	C	C	C	C
Tension band		R		R		R
Supply reel disk	C	C	C	C/R	C	C
Take-up reel disk	C	C	C	C/R	C	C
Pressure roller	C	C	C	C/R	C	C
Impedance roller	C	C	C	C	C	C
Capstan belt				R		
Reel drive idler				R		
Capstan shaft (capstan motor)	C	C	C	C/R	C	C
Loading motor				R		

C : Cleaning
R : Parts replacing

CHAPTER 2

1. HOW TO SET TO THE EJECT STATE MANUALLY

This is not necessary for camera/recorders which are set to the eject state normally.

1. REMOVE THE CASSETTE LID

<PROCEDURE>
① Lift the cassette lid in the direction of arrow (A) and insert tweezers between the cassette lid and left case. (Fig. 1-1)
② Release two (2) tabs (C) of the plate spring in the cassette lid in the direction of arrows (B) and remove the cassette lid in the direction of arrow (D).

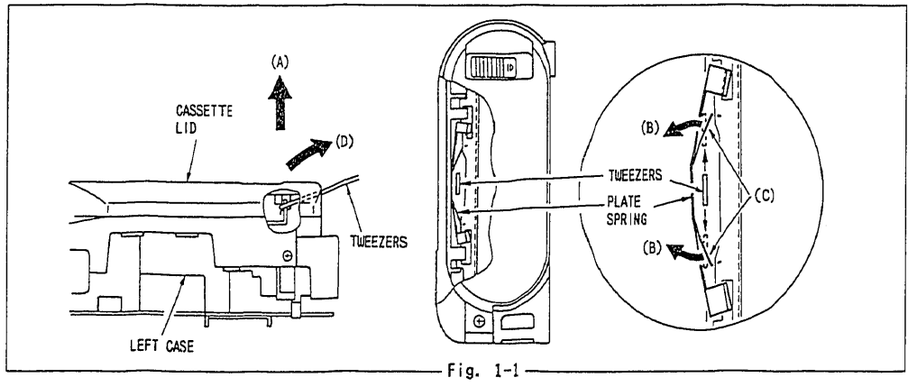


Fig. 1-1

2. UNLOADING METHOD

If the electrical circuit is defective, apply a voltage to the connector terminals of the loading motor after the components up to the right case block are removed. The camera/recorder can be set to the eject state. (Fig. 1-2) Be careful of the following when supplying power.

1) When the loading motor is normal (Fig.1-2)

<PROCEDURE>
① Set the power supply to 3-5 V DC.
② Connect the red wire to the positive terminal and the brown wire to the negative terminal to activate unloading. Connect the brown wire to the positive terminal and the red wire to the negative terminal to activate loading.

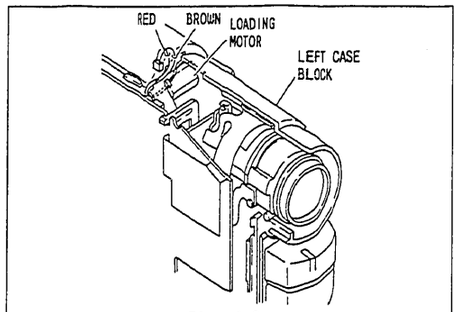


Fig. 1-2

2) When the loading motor is faulty (Fig.1-3)

<PROCEDURE>
① Remove the following parts in advance, referring to subsequent items.
- Lens hood, Lens hood holder, Lens side cover
- Operation SW unit and Top cover
- Open the right case
- Main block and Camera Block
- VCA circuit board
- VCR frame and tape transport mechanism
- Loading motor

② Turn the Loading Gear (1) in the direction of arrow (F) to unload. (Fig. 1-3)

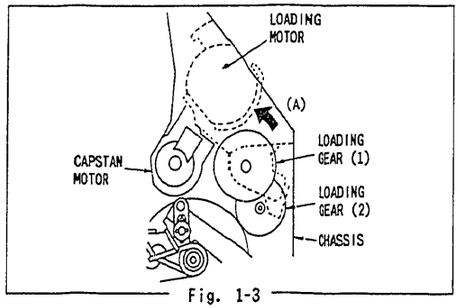
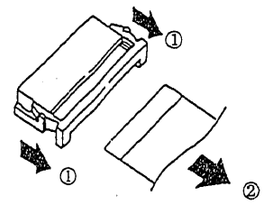


Fig. 1-3

2. BEFORE STARTING DISASSEMBLY

1. Be sure not to disassemble the lens block.
2. Set the camera/recorder to the eject state before dismantling it. If the camera/recorder will not enter the eject state due to a defect, refer to "1. HOW TO SET TO THE EJECT STATE MANUALLY"
3. Disconnect flat cables from connectors by the procedure shown in Fig. 2-1. Since many circuit boards in the camera/recorder are connected by in-board connectors, be sure to follow DISASSEMBLY when removing the circuit boards.

<HOW TO DISCONNECT A FLAT CABLE>



① Release the lock of the connector on the left and right simultaneously.
② Pull out the flat cable.

Fig. 2-1

3. WIRE LAYOUT DIAGRAM

・Layout of wires in right case
(Refer to the diagram when reinstalling.)

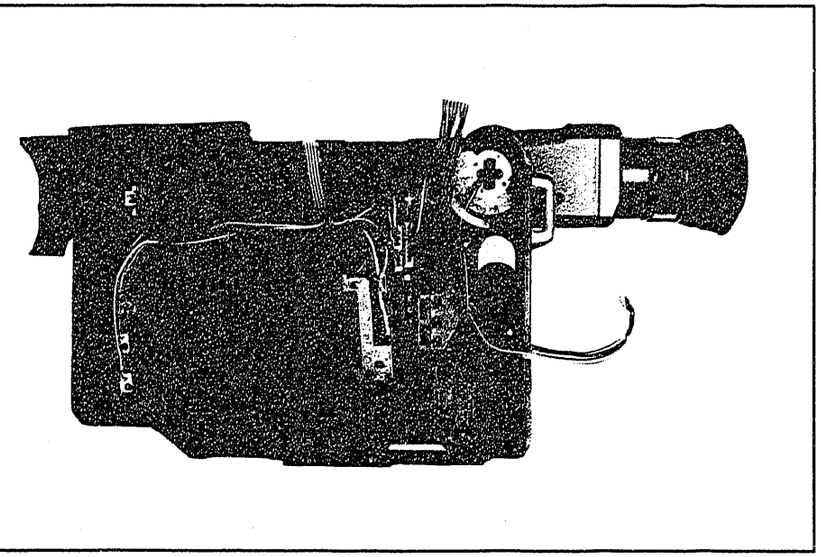


Fig. 3-1

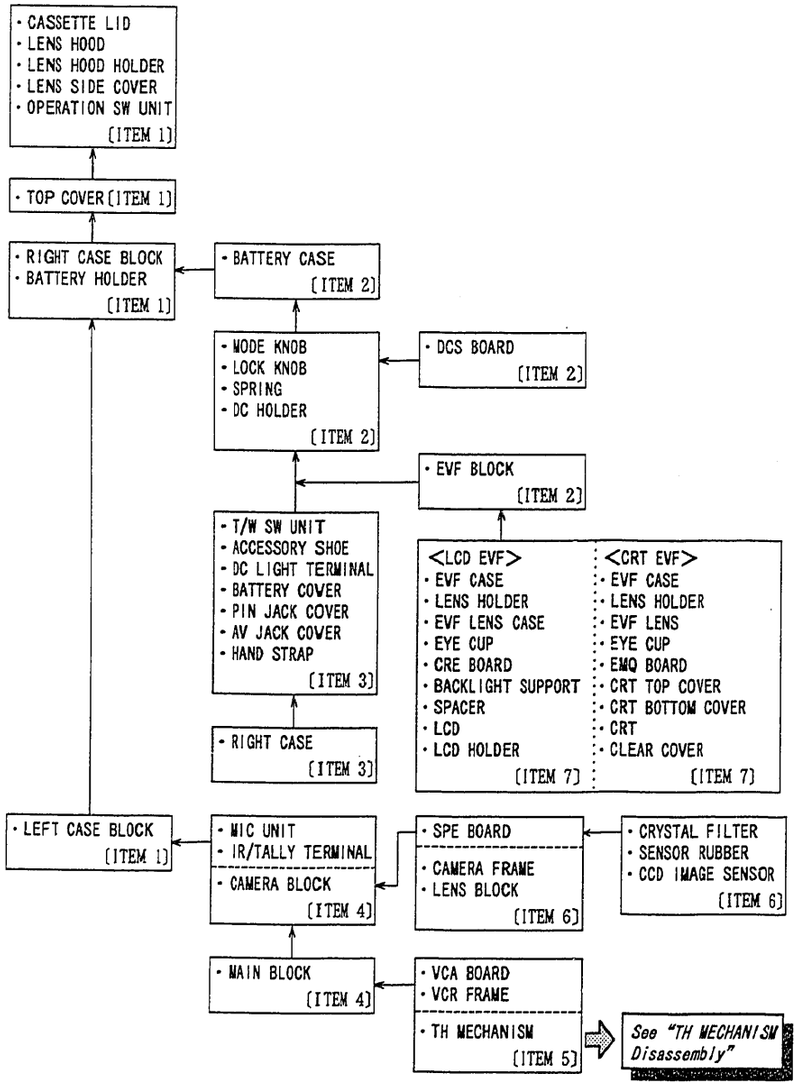
4. COMPONENTS REMOVAL

Refer to the following "parts hierarchy chart" first when replacing defective parts. This chart shows the parts removal procedure as the hierarchy in which parts should be replaced.

[How to use the parts hierarchy chart]

(1) Search for the part to be replaced in the chart.
(2) Check the part in the rank above the part to be replaced and then start dismantling.
(3) Replace the defective part and install it by the reverse procedure to that in the hierarchy chart.
(4) [Procedure when removing]
Remove the components in the order of letter (A,B,C···) in the illustrations.
[Procedure when reinstalling]
Reinstall the components by the reverse procedure to removal when not otherwise specified.

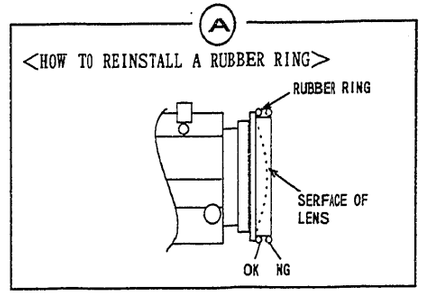
・Parts Hierarchy Chart



1. Cassette Lid, Lens Hood, Lens Holder, Top Cover, Operation SW Unit, Left Case Block, Right Case Block

◆ Caution during work

1) Set the unit to the eject state and remove the lens cap from the lens hood.
2) The rubber rings is removed on its own when the lens hood holder is removed.
Be sure to reinstall the rubber ring as shown in Ⓐ.
3) Remove the battery holder before removing the right case block.



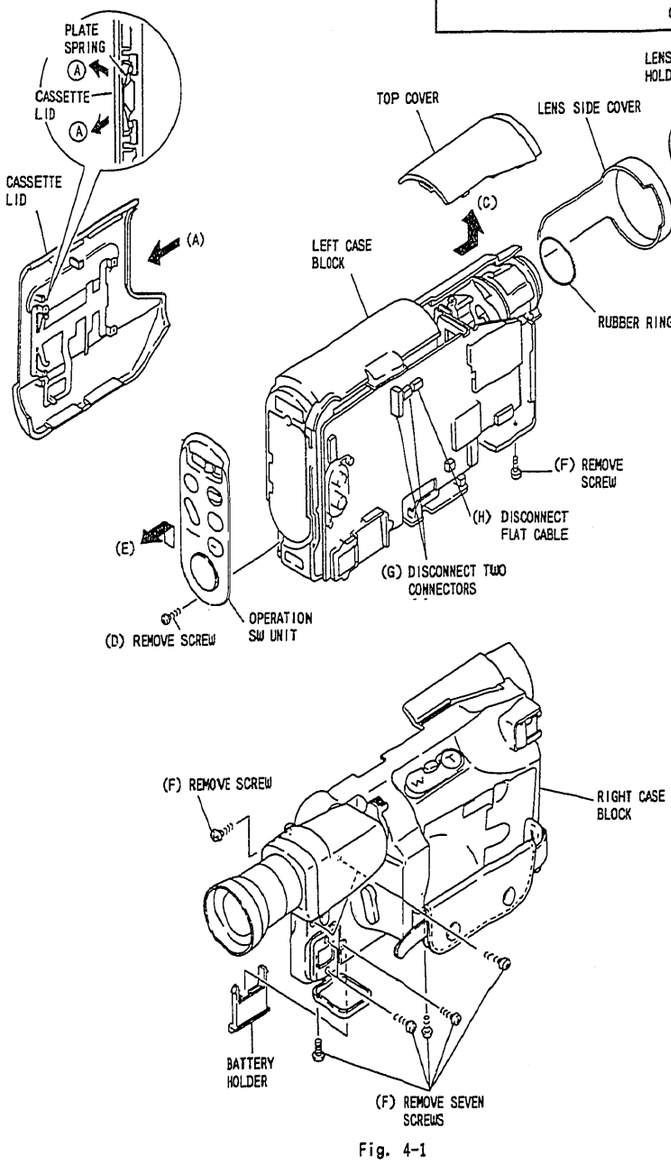


Fig. 4-1

2. Battery Case, DCS Circuit Board, EVF Block

◆ Caution during work
1) The EVF plate and plate spring are removed on their own when the EVF is removed.
2) Remove the wires before removing the battery case.

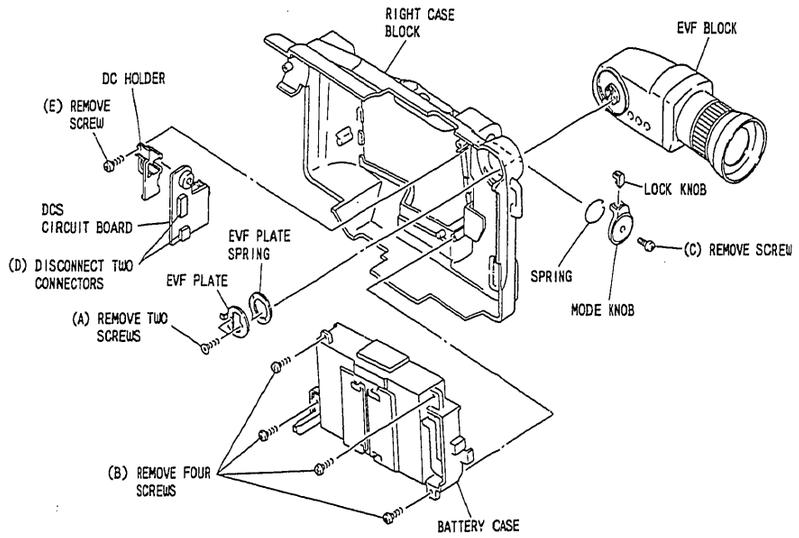


Fig. 4-2

3. T/W SW Unit, Accessory Shoe, DC Light Terminal, Hand Strap, Battery Cover, Right Case

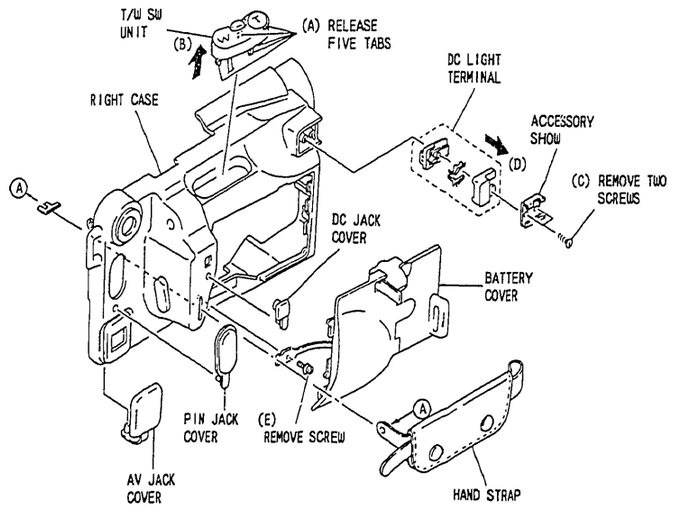


Fig. 4-3

4. Mic Unit, Left Case, Camera Block, Main Block

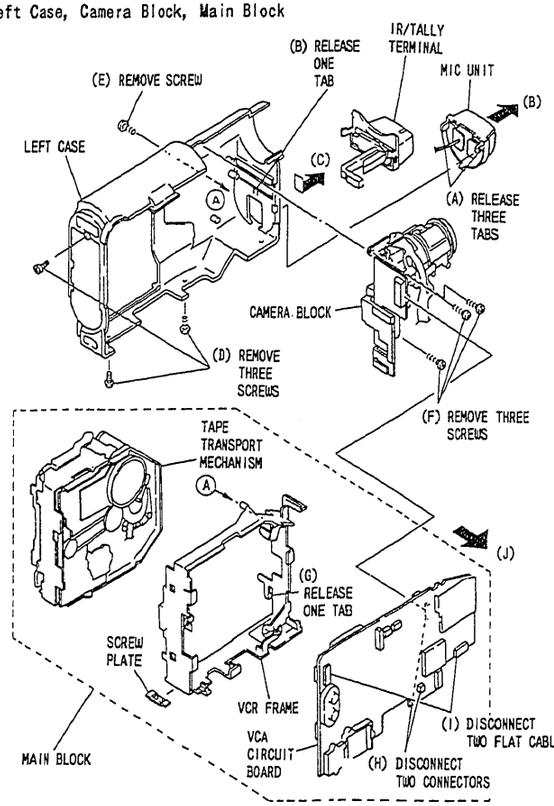


Fig. 4-4

5. VCA Circuit Board, VCR Frame, TH Mechanism

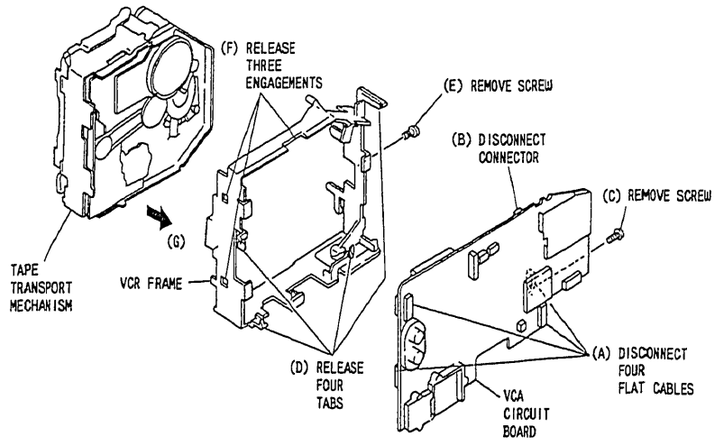
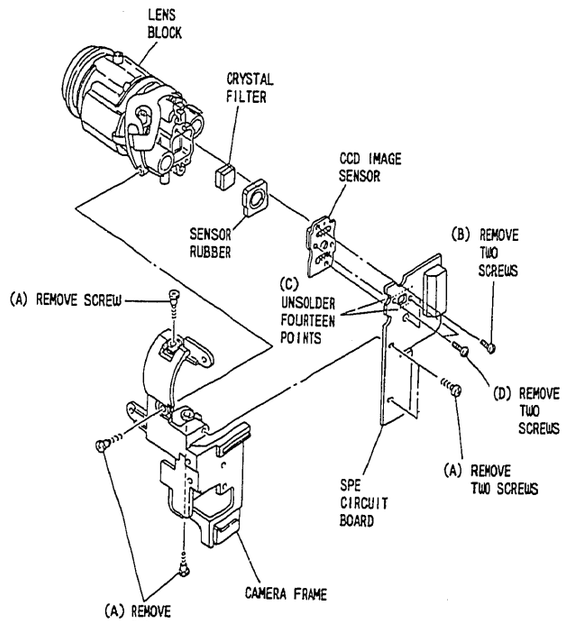


Fig. 4-5

6. Disassembly of Camera Block

◆ Caution during work
1) When the SPE Circuit Board is removed, the crystal filter and sensor rubber are removed on their own. Be careful not to damege the crystal filter.
2) Follow Ⓑ when removing the flat cable.
3) Be sure not to disassemble the lens block. Otherwise the camera/recoder will not operate nomally.



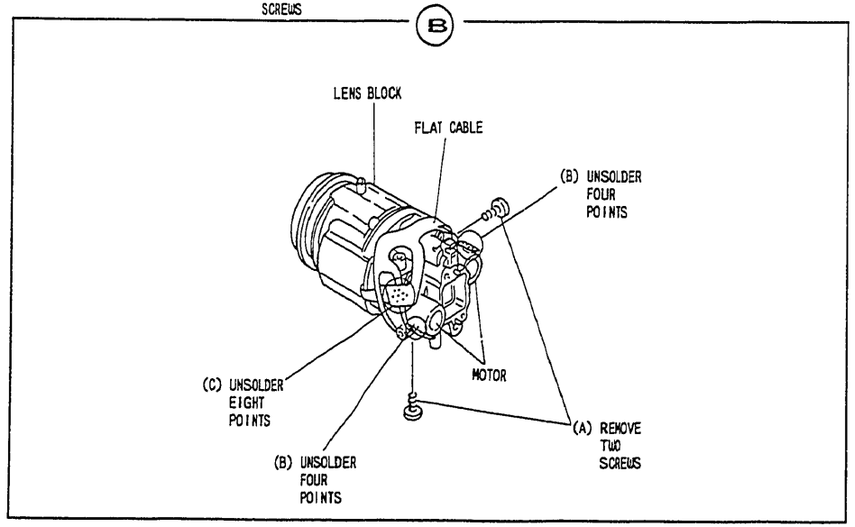


Fig. 4-6

7. Disassembly of EVF Block

《CRT EVF》

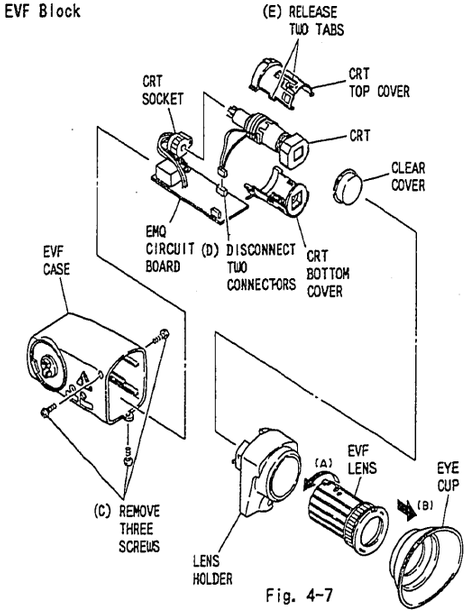


Fig. 4-7

《LCD EVF》

◆ Caution during work
1) When handling the LCD, never touch the LCD panel surface and flat cable connection section. Otherwise, it could case a defect.

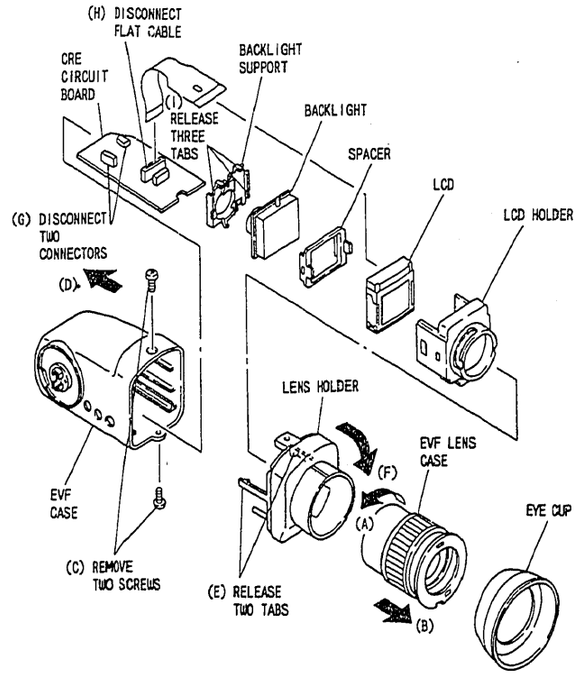


Fig. 4-8

5. CHANGE OF "TH MECHANISM"

This describes only the differences from the "TH MECHANISM" manual issued previously.

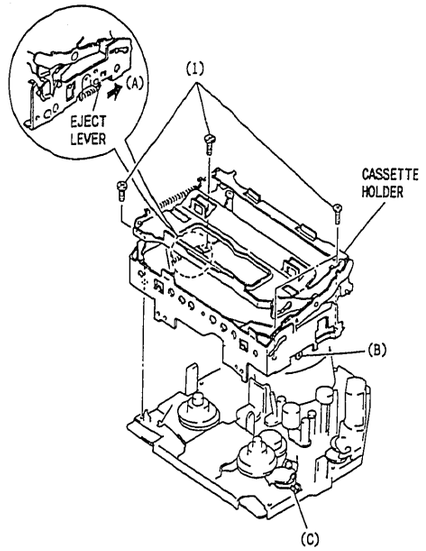
1. DISASSEMBLY

2-1. Cassette holder (Fig. 2-1)

1) Move the eject lever in the direction of arrow (A) and set the unit to the eject state.

Caution when reinstalling
- Reinstall the cassette holder so that section (B) of the eject lock slider is inserted into section (C) of the eject lock arm.

CHANGED

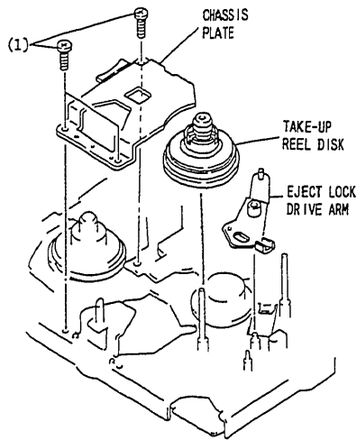


CHANGED

2-12. Chassis plate, Take-up reel disk (Fig. 2-13)

1) Remove screw (1) holding the chassis plate.
2) Remove the chassis plate from the chssis.
3) Pull out the take-up reel disk from the take-up reel disk shaft.

Caution when reinstalling
- When reinstalling the chassis plate, make sure the flange covers over the edges of the tension band.



2-13. Eject lock drive arm (Fig. 2-13)

1) Remove the eject lock drive arm from the eject lock arm.

Caution when reinstalling
- Reinstall the eject lock drive arm so that pin (B) of the eject lock arm is inserted into hole (A) in the eject lock drive arm.

DELETED

3-2. Loading Gears and Loading Ring (Figs. 3-2, 3-3)

Caution
- Be careful that the phase of the mechanism state switch which was matched in item 3-1 does not drift.

●Procedure of phase matching in assembly

1) Align the markings of the loading ring and gears as shown in Fig. 3-2.

Caution: When reinstalling the pressure roller cam gear, set the eject lock drive arm to the position shown in Fig. 3-3 and check that pin (j) is inserted into groove (J) in the back of the pressure roller cam gear.

Advice: If it is difficult to see marking (D) on the lower loading ring, match the phase by the following procedure.

① Set the upper and lower loading rings to the state shown in Fig. 3-2. (Watch the guide roller fixing section.)
② Move the upper and lower loading rings so that holes (H) overlap each other.
③ If holes (H) overlap each other, the phase of the loading ring is correct.
④ If holes (K) overlap each other, the phase of the loading relay gear (4) is correct.

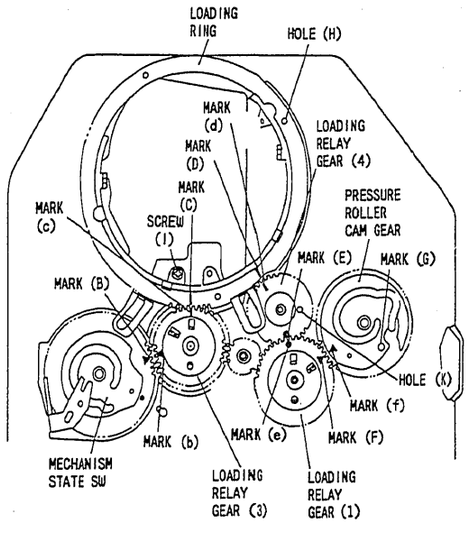


Fig. 3-2

CHANGED

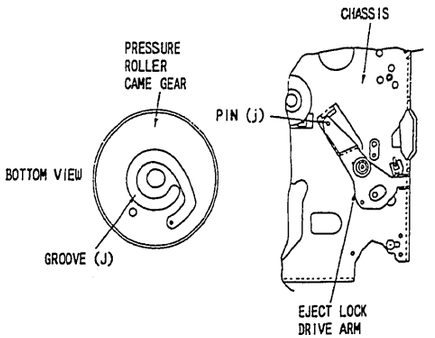


Fig. 3-3

2. MECHANISM ADJUSTMENT

3-3. Supply/Take-up Guide Roller Height Adjustment (Figs. 3-4, 3-5)

Caution

·Be sure to check this item after reinstalling the supply guide roller and take-up guide roller. Basically, the height of the supply/take-up guide rollers should not be adjusted. Adjust these heights only if they are abnormal.

Test equipment/jigs	Test equipment/jigs connection points	State of VCR	Adjustment point
· Alignment tape · Oscilloscope · ATF-R jig · Special driver	· Test Plug on Main board · TP1(SW25/30) on ATF-R jig · TP2(GND) on ATF-R jig · TP3(FM OUT) on ATF-R jig	· Connect the ATF-R jig to test plug. · ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical center)	· Top of guide rollers

●Adjustment procedure

Caution: Before performing this adjustment, refer to Fig. 6-1 and modify the ATF-R jig. Connect the ATF-R jig before suppling power.

1) Load an alignment tape that has been completely rewound. Press the PLAY button and hold it, then set the POWER switch to VIDEO position.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Synchronize the oscilloscope with TP1 (SW25/30) on the ATF-R jig.
4) Set the osilloscope to (+) slope.

◆Supply Guide Roller (Fig. 3-4)

5) Press SW2 on the ATF-R jig and hold it, then perform the following steps.
6) Adjust the height of the supply guide roller so the waveform is flat.
7) Adjust the voltage level control of the oscilloscope so that portion (A) of the waveform is set to 4 graduations.
8) Set SW1 on the ATF-R jig to ON.
9) Turn RT1 on the ATF-R jig counterclockwise so the voltage at point (C) on the ATF-R jig is 1.8 ± 0.1V. Then check that point (B) of the waveform is set to 3 graduation.
10) Adjust the height of the supply guide roller so minimum amplitude of the waveform is set to NTSC:2.3±0.3/PAL:2.5±0.3 graduations.

◆Take-up Guide Roller (Fig. 3-5)

11) Set the oscilloscope to (-) slope.
12) Adjust the voltage level control of the oscilloscope so that portion (B) of the waveform is set to 4 graduarions.
13) Turn RT1 on the ATF-R jig counterclockwise so the voltage at point (C) on the ATF-R jig is 1.8 ± 0.1V. Then check that point (B) of the waveform is set to 3 graduation.
14) Adjust the height of the take-up guide roller so the minimum amplitude of the waveform is set to NTSC:2.5±0.3/PAL:2.3±0.3 graduations.

Caution: After adjustment is completed, be sure to reverse the modification to ATF-R jig.

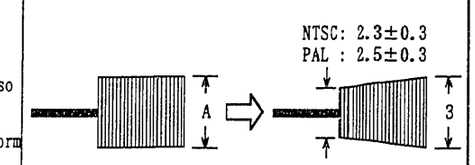


Fig. 3-4

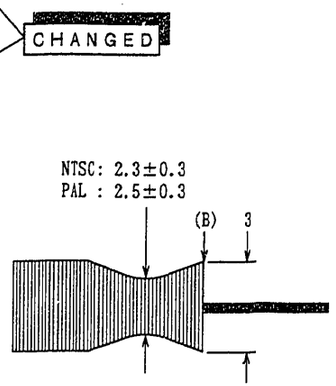


Fig. 3-5

4. ADJUSTMENT AFTER REPLACING THE CYLINDER (Figs. 4-1, 4-2)

When the cylinder is replaced, the height relative to the guide roller drifts, therefore the tape transport system and servo circuit should be adjusted. Check and adjust in the following order.

Test equipment/jigs	Test equipment/jigs connection points	State of VCR	Adjustment point
· Alignment tape · Oscilloscope · ATF-R jig · Special driver	· Test Plug on Main board · TP1(SW25/30) on ATF-R jig · TP2(GND) on ATF-R jig · TP3(FM OUT) on ATF-R jig	· Connect the ATF-R jig to test plug. · ATF-R jig (SW1: OFF, SW3: ON, RT1: mechanical center)	· Top of guide rollers

●Adjustment procedure

Caution: Before performing this adjustment, refer to Fig. 6-1 and modify the ATF-R jig.

1) Load an alignment tape that has been completely rewound. Press the PLAY button and hold it, then set the POWER switch to the VIDEO position.
2) Connect an oscilloscope to TP3 on the ATF-R jig.
3) Syncronise the oscilloscope with TP1(SW25/30) on the ATF-R jig.
4) Set the oscilloscope to (+) slope.
5) Press SW2 on the ATF-R jig and hold it, then perform the following steps.
6) Adjust the voltage level control of the oscilloscope so that portion (A) of the waveform is set to 4 graduations.
7) Set SW1 on the ATF-R jig to ON.
8) Turn RT1 on the ATF-R jig counterclockwise so that portion (A) of the waveform is set to 3 graduations.
9) Adjust the height of the supply guide roller so the minimum amplitude of the waveform is set to NTSC:2.3±0.3/PAL:2.5±0.3 graduations. (See Fig. 4-1)
10) If this cannot be confirmed, adjust the height of the supply guide roller, referring to "3-3.Supply/Take-up Guide Roller Height Adjustment".
11) Set the osilloscope to (-) slope.
12) Turn RT1 on the ATF-R jig counterclockwise so the voltage at point (C) on the ATF-R jig is 1.8±0.1V. Then check that point (B) of the waveform is set to 3 graduation.
13) Check that the minimum amplitude of the waveform is set to NTSC:2.3±0.3/PAL:2.5±0.3 graduations. (See Fig.4-2)
If this cannot be confirmed, adjust the height of the take-up guide roller, referring to "3-3.Supply/Take-up Guide Roller Height Adjustment".
14) Perform the following electrical adjustments.
·Head switching point adjustment
·Record luminance/chroma level adjustment

Caution: After adjustment is complete, be sure to reverse the modification to ATF-R jig.

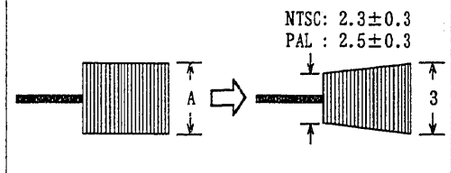


Fig. 4-1

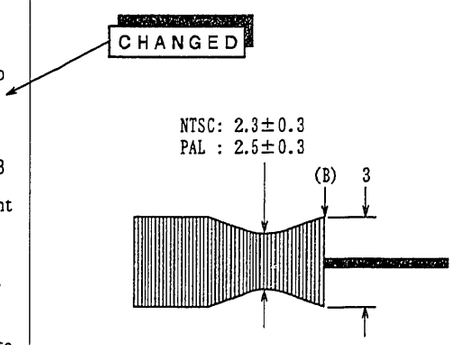


Fig. 4-2

5. CHECKING THE TORQUE

There are two types of cassette torque meter.
Choose the applicable one for the measurement to be performed.

Item	VCR mode	Measured reel disk	Torque value	Torque cassette used
Take-up torque	Playback	Take-up	7-13 g-cm	SRK-8T-212 SRK-8T-232
Rewind torque	Reverse search	Supply	25-37 g-cm	SRK-8T-232
Take-up brake torque	Reverse search to stop	Take-up	10 g-cm ro more	SRK-8T-212 SRK-8T-232
Slack removal torque	Unloading	Supply	25-37 g-cm	SRK-8T-232

6. MODIFICATION TO ATF-R JIG (Fig. 6-1)

Caution: The ATF-R jig must be modified for the following adjustments.
After completing these, be sure to reverse the modification.
- 3-3. Supply/Take-up Guide Roller Height Adjustment
- 4. ADJUSTMENT AFTER REPLACING THE CYLINDER

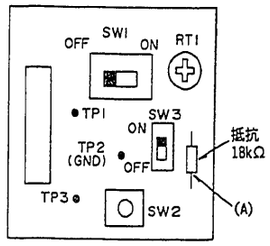
CHANGED

●Procedure

1) Short terminal (A) of the resister on the ATF-R jig and pin 1 (5V) of the connector.

Note: This modification makes SW2 on the ATF-R jig a PCM area observation switch.

Caution: Use a shorting clip, etc. to short the parts; this can be removed easily after adjustment is completed.
A modification is also necessary in the same way when the ATF jig is used.



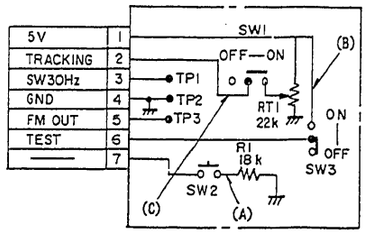


Fig. 6-1

4. PHOTOS OF MECHANISM

·Refer to these when reinstalling and perform phase matching in assembly.

4-1. Top View of Mechanism

CHANGED

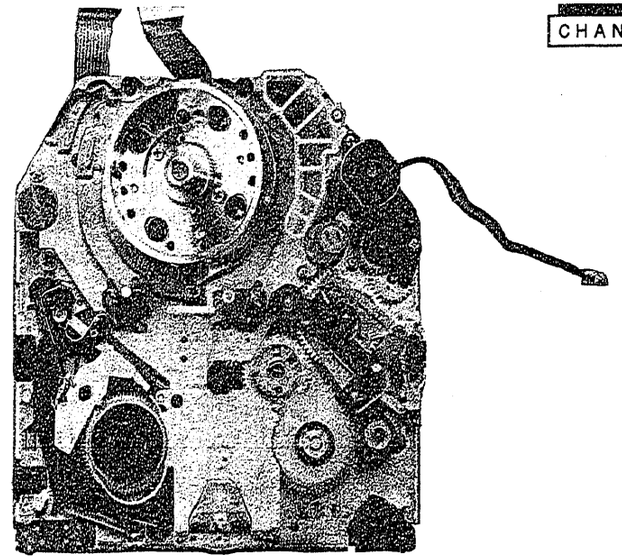


Fig. 4-1

4-2. Bottom View of Mechanism

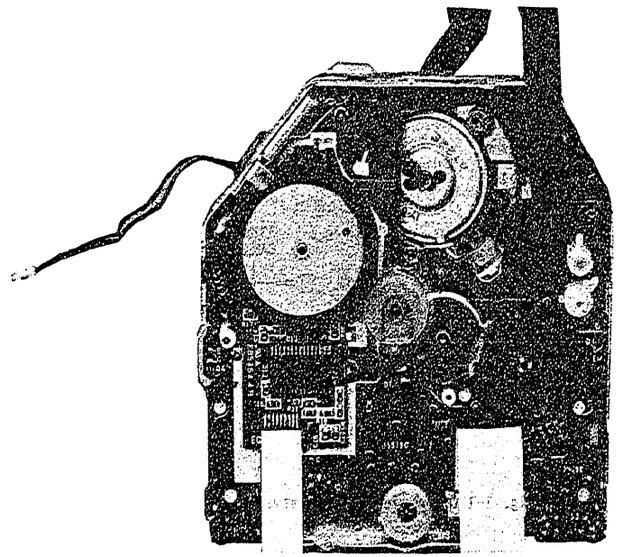


Fig. 4-2

CHAPTER 3

ELECTRICAL ADJUSTMENT

Abbreviation

MAP ···· Digital adjustment program for the camera
DSP ···· Digital signal processor

1. CONNECTION FOR ADJUSTMENT

- Most adjustment items can be done without dismantling the camera/recoder.
- Connect the EVF to display the operation mode on the monitor screen.

◆ To perform the following adjustments, set the camera/recorder to the state as shown in CHAPTER 1 Extension Cable Connection Diagram, referring to "CHAPTER 2 DISASSEMBLY".

- VCR Section Adjustments
- Electronic Viewfinder Adjustments

(The EVF block should further be taken apart.)

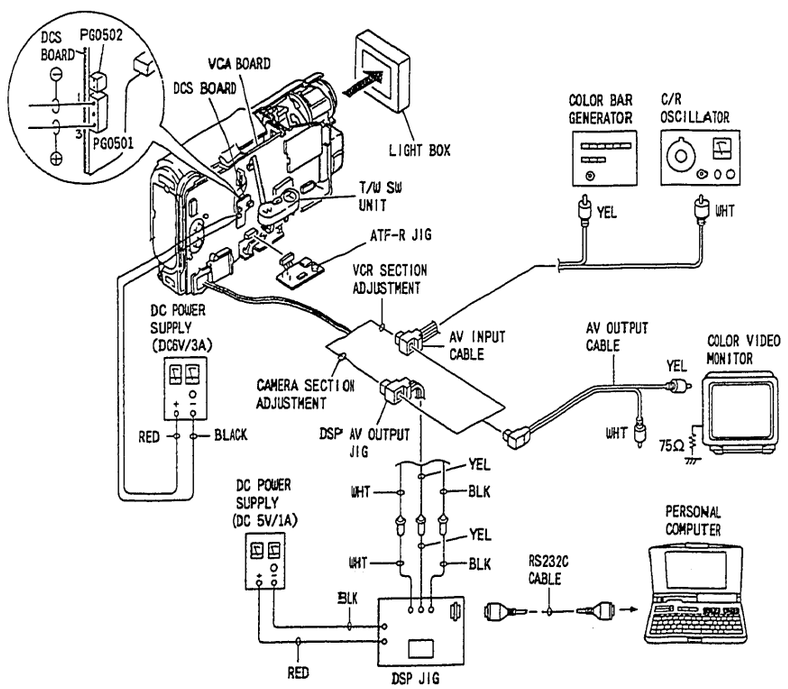


Fig. 1-1 Connection for adjustment

2. CAMERA SECTION ADJUSTMENT

1. CIRCUIT BOARD LOCATIONS

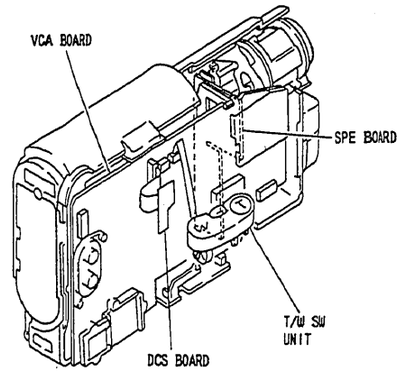


Fig. 2-1

2. TEST EQUIPMENT AND CHARTS NECESSARY FOR ADJUSTMENT

1) Test Equipment
   - Oscilloscope (dual trace) [Vectorscope]
   - Digital Voltmeter (DVM)
   - Frequency Counter
   - Color Video Monitor
2) Charts, etc.
   - Adjustment Floppy Disk
   - Personal Computer
   - Personal Computer 9-pin or 25-pin (RS232C) Cable
   - DSP-R Jig
   - DSP AV Output Cable
   - Gray Scale Chart
   - Color Bar Chart
   - Resolution Chart
   - Backfocus Adjustment Chart
   - Light Box (3100°K)
   - Light Balancing Filter C12
   - DC Power Supply (DC6V/3A)
   - DC Power Supply (DC5V/1A)

3. ADJUSTMENT CONDITION

1) Check that the VCR section has been adjusted correctly before adjusting the camera section.
2) Use a light box with minimum flickering. Control the colour temperature of the light box strictly.
3) Connect this unit, a power supply and a color video monitor as shown in Fig. 1-1.
4) When using the video out (AV OUT) to perform adjustment, be sure to terminate the AV OUT jack with 75 ohms.
5) Place the chart (light box) approx. 30cm away from the camera (lens surface) when otherwise not specified.
6) Point the camera at the chart to full the video period when otherwise not specified.
7) Use the 10:1 probe of the oscilloscope when otherwise not specified.
8) When "Trigger the oscilloscope internally" is specified, set the time base of the oscilloscope to 10μs/div.

4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ... "CAMERA" position
- INST. ZOOM ..... Not Display mode
- DATE ..... Not Display mode
- DISPLAY ..... Not Display mode
- TITLE ..... Not Display mode
- FOCUS ..... Auto mode
- EIS ..... OFF mode
- 16×9 ..... OFF mode
- FADE ..... Normal mode

5. LIST OF CHARTS FOR CAMERA ADJUSTMENT

Table 2-1

GREY SCALE CHART	COLOR BAR CHART	RESOLUTION CHART
BACKFOCUS ADJ. CHART		

6. CHECK AFTER REPLACING MAJOR COMPONENTS IN THE CAMERA SECTION

After replacing major components, perform adjustments, referring to the table below.
The following table shows the minimum adjustments required after major components are replaced.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Caution : When EEP ROM or the VCA circuit board is replaced, initialize the EEP ROM, referring to "7-3 Initial Setting by Model", then perform all the camera section and system control/ servo circuits adjustments.

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS										
		SPE BOARD	VCA BOARD	IC1001	IC1101	IC1106	IC1107	IC1201 IC1202	IC1105	IC1103	IC1401 IC1402	IC1403
—	Initial Setting by Model		●				●					
ELECTRIC VOLUME ADJUSTMENT PROCEDURE												
(1)	CDS Offset Adjustment		●		●		●					
(2)	Sensor Sub Voltage Adjustment	●	●	●		●	●		●			
(3)	CDS Sampling pulse		●				●			●		
DIGITAL ADJUSTMENT PROCEDURE												
(1)	Auto Iris Control Adjustment	●	●	●		●	●	●				
(2)	Knee Adjustment		●		●		●					
(3)	Matrix Adjustment	●	●	●			●					
(4)	White balance Adjustment	●	●	●			●					
(5)	Chroma gain Adjustment	●	●	●			●					
AUTO FOCUS ADJUSTMENT PROCEDURE												
(1)	Zoom Trace Adjustment	●	●	●			●					
(2)	AF Noise Level Adjustment	●	●	●			●					
STABILIZER ADJUSTMENT PROCEDURE												
(1)	Stabilizer Adjustment	●	●				●				●	●
SPOT NOISE ADJUSTMENT PROCEDURE												
(1)	Spot Noise Adjustment		●	●			●					

7. CAMERA SECTION ADJUSTMENT PROCEDURE

— NOTE —

1: To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/ recorder and jigs.
2: The following describes an example of the instructions of the personal computer and the menu display; they are different depending on the personal computer manufacturer and model. Refer to the instruction manual of personal computer.
3: When the error message appears during adjustment, refer to "4.Error Messages". If a key is pressed after an error message appears, the ADJUSTMENT MENU is restored.

```
F>
```

Fig. 2-2

↓

LOAD THE CAMERA ADJ. FLOPPY DISK INTO DISK DRIVE B

↓

Press [B] [:] [ENTER]

↓

```
F>B:
B>
```

Fig. 2-3

↓

Press [M] [A] [P] [_] [I] [B] [M] [(SPACE)] [1] [ENTER]

↓

(A)

7-1. Connections for Adjustment

Connect the camera/recorder, DSP jig, personal computer, power supply, etc. as shown in Fig. 1-1. Check that the camera/recorder is turned on.

7-2. How to start the MAP

—— PROCEDURE ——

1) Turn the personal computer on and start the MS-DOS system. (Fig. 2-2)

2) Load the adjustment floppy disk into disk
(·drive B and press [B] [:] then [ENTER] .
or
·drive A and press [A] [:] then [ENTER] .) (Fig. 2-3)

3) Press [M] [A] [P] [_] [I] [B] [M] [(SPACE)] [1] then [ENTER] .
The MAP starts and the MODEL SELECT shown Fig. 2-6 appears.

—— NOTE ——

·When you use a personal computer with two serial interface connectors and connect the DSP jig to serial interface connector 2, press MAP_IBM 2.

4) Select the number accodding to the model. If [ESC] (escape) is pressed, the display before the MAP starts (MS-DOS) is restored.

—— NOTE ——

1. If you specify the wrong model, press [ESC] (escape) to restore the MODEL SELECT display, then specify the correct model.
2. If you select number without a model name by mistake, the message shown in Fig. 2-8 will appear in the computer's display. Press any key to return the display to Fig. 2-6 (MODEL SELECT).
3. If the required model is not found, press the [P] key and select the model from the next screen.

(A)

↓

```
F>B:
B>MAP_IBM 1
```

Fig. 2-4

↓

```
Manual adjustment program for service station
Copyright (C) Hitachi LTD
```

Fig. 2-5

↓

MODEL SELECT

```
**********************************************
*************** MODEL SELECT *****************
**********************************************

        [1]   XXXXXXXX
        [2]   XXXXXXXX
        [3]   XXXXXXXX
        [4]   XXXXXXXX
        [5]   XXXXXXXX
        [P]   NEXT SELECTION
        [ESC] END

   Please select the type of the set.
   Press [1] - [5] or [P] or [ESC]
```

Fig. 2-6

↓

Press numeric key

↓

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM **********
**********************************************

        [A]   DATA INITIALIZE
        [B]   ELECTRIC VOLUME
        [C]   ADJUSTMENT
        [D]   AUTO FOCUS
        [E]   VCR ADJUSTMENT
        [F]   EIS
        [G]   SPOT NOISE
        [ESC] END

Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-7

MESSAGE WHEN OPERATED BY MISTAKE

```
   Can not find the DATA FILE
   **** PRESS ANY KEY ****
```

Fig. 2-8

7-3. Initial Setting by Model

◆ Before Starting Adjstment

- This item describes how to initialize the EEP ROM. Be sure to perform this item after replacing EEP ROM or the VCA circuit board. When other components are replaced, normally, it is not necessary to initialize the EEP ROM. Press [ESC] (escape) to return the computer's display to MAIN MENU.
- Be sure to perform the following adjustments after completing the initial setting.

CAMERA	7-4	Electric Volume Adjustment Procedure
	7-5	Digital Adjustment Procedure
	7-6	Autofocus Adjustment Procedure
VCR	7	System Control/Servo Circuits Adjustment

—— PROCEDURE ——

1) Start the MAP.

2) Press [A] to select INITIALIZE. (Figs. 2-9, 2-10)

3) Press [Y] to start. (Figs. 2-10, 2-11)

— NOTE —

- Press [N] to return to MAIN MENU. (Fig. 2-10)
- The Fig. 2-10 appears a few time Press the [Y] key each time.

4) If there are no abnormalities in the camera/recorder, the message shown in Fig. 2-11 is displayed in the computer's display for a while, and then the message informing you that the initial setting has been completed (shown in Fig. 2-12) is displayed.

5) If the message shown in Fig. 2-12 appears in the computer's display, press any key. The computer's display returns to Fig. 2-9 (MAIN MENU).

MAIN MENU

```
**********************************************
******** MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-9

⬇

Press [A]

⬇

```
<< DATA WRITING >>
START TO SEND DATA.     (Y/N)
```

Fig. 2-10

⬇

Press [Y]

⬇

```
<< DATA WRITING >>
PLEASE WAIT A MOMENT
```

Fig. 2-11

⬇

```
<< DATA WRITING >>
PLEASE WAIT A MOMENT
FINISHED WRITING DATA !!
PRESS ANY KEY !
```

Fig. 2-12

⬇

Press any key to return to Fig. 2-9

7-4. Electric Volume Adjustment Procedure

◆ Before Starting Adjstment

- When EEP ROM or the VCA circuit board is replaced, initialize the EEP ROM, referring to "7-3. Initial Setting By Model" then perform all the electric volume adjustments.

—— PROCEDURE ——

1) Start the MAP.

2) Press [B] to select ELETRIC VOLUME. (Figs. 2-13, 2-14)

3) Select the number of the required adjustment.

— NOTE —

1. If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-13 (MAIN MENU).
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
**********************************************
******** MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-13

⬇

Press [B]

⬇

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************** ELECTRIC VOLUME ***************
**********************************************
  [1]   CDS OFFSET
  [2]   SENSOR SUB VOLTAGE
  [3]   CDS SAMPLING PULSE
  [ESC] RETURN TO MAIN MENU
 Please select [1], [2], [3] or [ESC]
```

Fig. 2-14

(1) CDS Offset Adjustment

Purpose	·To determine the DC offset levels when the AGC is set to the minimum and maximum gains.
Incompleted Phenomenon	·When a subject is illuminated brightly in low lighting, a white band appears across the top of the screen.
Test Point	———
Equipment/Jig	———
Condition	———

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************* ELECTRIC VOLUME ****************
**********************************************
   [1]    CDS OFFSET
   [2]    SENSOR SUB VOLTAGE
   [3]    CDS SAMPLING PULSE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3] or [ESC]
```

↓

Press [1] key to select the CDS OFFSET.

↓

```
<< ADJUSTMENT OF CDS OFFSET >>
PLEASE WAIT AROUND 50 SEC.
```

↓

```
<< ADJUSTMENT OF CDS OFFSET >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY
```

↓

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(2) Sensor Sub Voltage Adjustment

Purpose	·To determine the level of the pulse output from the CCD sensor. To determine the bias voltage of the CCD sensor.
Incompleted Phenomenon	·No picture. ·No color. ·Rough picture. ·Smear occurs.
Test Point	———
Equipment/Jig	———
Condition	·Point the camera at the light box without a chart to full the screen (at wide-angle).

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************* ELECTRIC VOLUME ****************
**********************************************
   [1]    CDS OFFSET
   [2]    SENSOR SUB VOLTAGE
   [3]    CDS SAMPLING PULSE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3] or [ESC]
```

↓

Press [2] key to select the SENSOR SUB VOLTAGE.

↓

```
<< ADJUSTMENT OF SENSOR SUB VOLTAGE >>
<< NOW ADJUSTING >>
```

↓

```
<< ADJUSTMENT OF SENSOR SUB VOLTAGE >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY.
```

↓

Press any key to return to ELECTRIC VOLUME ADJ. MENU.

(3) CDS Sampling Pulse Adjustment

Purpose	·To suppress noise in the CCD sensor output signal and maximize the signal level.
Incompleted Phenomenon	·Diagonal beats and horizontal noise occur.
Test Point	———
Equipment/Jig	———
Condition	·Leave the camera/recorder for more than 2 minutes untill the circuits are stabilized after turing it on, then start adjustment.

PROCEDURE

ELECTRIC VOLUME ADJ. MENU

```
**********************************************
************* ELECTRIC VOLUME ****************
**********************************************
   [1]    CDS OFFSET
   [2]    SENSOR SUB VOLTAGE
   [3]    CDS SAMPLING PULSE
   [ESC]  RETURN TO MAIN MENU
  Please select [1], [2], [3] or [ESC]
```

↓

Press [3] key to select the CDS SAMPLING PULSE.

↓

```
<< ADJUSTMENT OF CDS SAMPLING PULSE >>
<< NOW ADJUSTING >>
```

↓

```
<< ADJUSTMENT OF CDS SAMPLING PULSE >>
FINISHED WRITING DATA.
ADJUSTMENT FINISHED.
PRESS ANY KEY !
```

↓

Press any key to return to ELECTRIC VOLUME MENU.

7-5. Digital Adjustment Procedure

◆Before Starting Adjustment

- When EEP ROM or the VCA circuit board is replaced, initialize the EEP ROM, referring to "7-3 Initial Setting By Model" then perform all the digital adjustments.

NOTE: If an old light box is used , this adjustnment may not be done. Use the following procedure to adjust without using a light box.

- Illuminate a white sheet of paper using an appropriate light source of 2,000-2,500lux (a halogen light of 3,200K is desirable).
- Point the camera/recoder at the illuminated white sheet of paper to fill the screen as far as possible (at wide-angle).
- Adjust the distance between the camera /recoder and white sheet of paper so that no error message appears.

◆Caution when adjustment

Caution: Perform auto iris adjustment [1. AUTO IRIS CONTROL] and knee adjustment [2. KNEE] in the following order.

① Auto Iris Adjustment (Perform the following autofocus adjustment if "ADJUSTMENT OF HALL CURVE" is not completed).
② Zoom Trace Adjustment in AUTOFOCUS ADJUSTMENT PROCEDURE.
③ AF Noise Level Adjustment in AUTOFOCUS ADJUSTMENT PROCEDURE.
④ Auto Iris Adjustment (All three items, "ADJUSTMENT OF IRIS OPEN & CLOSE", "ADJUSTMENT OF IRIS" and "ADJUSTMENT OF HALL CURVE" should be complete).
⑤ Knee Adjustment.

—— PRROCEDURE ——

1) Start the MAP.

2) Press C to select ADJUSTMENT. (Figs. 2-16, 2-17)

3) Select the number of the required adjustment.

—— NOTE ——

1. If ESC (escape) is pressed, the computer's display returns to Fig. 2-16 (MAIN MENU).
2. To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
*********************************************
******** MANUAL ADJUSTMENT PROGRAM **********
*********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-16

↓

Press C

↓

ADJUSTMENT MENU

```
*********************************************
*************** ADJUSTMENT ******************
*********************************************
          [1]   AUTO IRIS CONTROL
          [2]   KNEE
          [3]   MATRIX
          [4]   WHITE BALANCE
          [5]   CHROMA GAIN
          [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Fig. 2-17

(1) Auto Iris Control Adjustment

- Perform this adjustment, following the order described in "◆ Caution When Adjustment" on the previous page.

Purpose	·To set the iris control data.
Incompleted Phenomenon	·The picture becomes too bright. ·The picture becomes too dark.
Test Point	———
Equipment/Jig	———
Condition	·Point the camera at the light box without a chart to full the screen (at wide-angle).

PROCEDURE

ADJUSTMENT MENU

```
*********************************************
*************** ADJUSTMENT ******************
*********************************************
          [1]   AUTO IRIS CONTROL
          [2]   KNEE
          [3]   MATRIX
          [4]   WHITE BALANCE
          [5]   CHROMA GAIN
          [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

↓

Press 1 key to select the AUTO IRIS CONTROL.

↓

```
<<ADJUSTMENT OF IRIS OPEN & CLOSE>>
PLEASE WAIT AROUND 10 SEC.
```

↓

```
<<ADJUSTMENT OF IRIS OPEN & CLOSE>>
PLEASE WAIT AROUND 10 SEC.

DATA WRITEN INTO EEPROM
ADJUSTMENT FINISHED

PRESS ANY KEY
```

↓

Press any key, and the display changes as follows.

↓

```
<< ADJUSTMENT IRIS >>
PLEASE WAIT AROUND 20 SEC.
```

—※1—

↓

```
<< ADJUSTMENT IRIS >>
PLEASE WAIT AROUND 20 SEC.

ROUGH ADJUSTMENT      : XX TIMES
FINE ADJUSTMENT       : XX TIMES

ADJUSTMENT FINISHED

PRESS ANY KEY
```

↓

(B)

↓

Press any key, and the display changes as follows.

↓

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
NTSC
```

—※2—

↓

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
NTSC

*
ADJUSTMENT POINT 0 1 2 3 4 5 6 7 8 9 A B C
```

↓

```
<< ADJUSTMENT OF HALLCURVE >>
PLEASE WAIT AROUND 30 SEC.
NTSC

                 *
ADJUSTMENT POINT 0 1 2 3 4 5 6 7 8 9 A B C

DATA WRITEN INTO EEPROM
ADJUSTMENT FINISHED

PRESS ANY KEY
```

↓

Press any key, and the display changes as follows.

↓

```
ADJUSTMENT FINISHED

PRESS ANY KEY
```

↓

Press any key to return to ADJUSTMENT MENU.

—— NOTE ——

1. With some units the following parameter may not be displayed in the display marked ※1. This is normal; continue adjustment.
   ROUGH ADJUSTMENT: XX TIMES
2. The * mark flashes above the numerals and letters in sequence in the display marked ※2.

(2) Knee Adjustment (Fig. 2-18)

• Perform this adjustment, following the order described in "◆ Caution When Adjustment" on the page before the previous page.	
Purpose	·To determine the knee level.
Incompleted Phenomenon	·Color in the very bright section is defective.
Test Point	·Video Out (AV OUT)
Equipment/Jig	·Oscilloscope (Waveform Monitor)
Condition	·Point at a gray scale chart.

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

Press [2] key to select the KNEE.

```
**** KNEE ADJUSTMENT ****  STEP 1
* THIS ADJUSTMENT ONLY NEEDED
      AFTER REPLACING IC1101 OR IC1107. *
* THE [1] IRIS CONTROL ADJUSTMENT
      SHOULD HAVE JUST BEEN COMPLETED
  BEFORE PERFORMING THE FOLLOWING KNEE
              ADJUSTMENT PROCEDURE. *

PLEASE POINT AT THE CHART AND
                PRESS THE FOLLOWING KEY
RETURN TO MENU    [ESC]
GO TO NEXT STEP   [ENTER]
```

Press [ENTER] key to start the next step.

```
*** KNEE ADJUSTMENT ***  STEP 1
*** WAIT A MOMENT ***
```

(C)

(C)

```
**** KNEE ADJUSTMENT ****  STEP 2
SET LUMINANCE LEVEL TO
      100 (+/- 5) IRE OR 715 (+/- 35) mV

ROUGH ADJUSTMENT
[U]             UP
[D]             DOWN

FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN

[ENTER]         DECISION
```

Press the [U] and [D] keys to set the amplitude level to around 715mVp-p.
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys to adjust the amplitude level to 715mVp ± 35mVp-p.

Press [ENTER] key to start the next step.

```
**** KNEE ADJUSTMENT ****  STEP 3
ADJUST THE LUMINANCE LEVEL TO
            MATCH THE LEVEL FROM SETP 2

ROUGH ADJUSTMENT
[U]             UP
[D]             DOWN

FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN

[C]             REREAD THE LEVEL FROM STEP 2
[ENTER]         DECISION
```

Press the [U] and [D] keys to bring the amplitude level near to the level in step 2.
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys to match the amplitude level to that in step 2.

Press the [C] key. The level in step 2 can be checked.

```
**** KNEE ADJUSTMENT ****  STEP 3
WAVEFORM ON OSCILLOSCOPE IS NOW
DISPLAYING AMPLITUDE AS SET IN SETP 2
(PRESS C TO RETURN TO STEP 3 MENU)
```

(D)

(D)

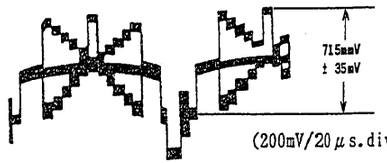
Press [ENTER] key, and the display changes as follows.

```
WRITING EEPROM NOW
```

```
*** KNEE ADJUSTMENT ***
END
PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU.

Waveforms



(200mV/20 μs.div.)

Fig. 2-18

(3) Matrix Adjustment (Fig. 2-19)

Purpose	To compensate for uneveness in the chroma signal.
Incompleted Phenomenon	Color reproduction becomes defective.
Test Point	·Video Out (AV OUT)
Equipment/Jig	·Oscilloscope
Condition	·Point at a color bar chart.

PROCEDURE

ADJUSTMENT MENU

```
**********************************************
*************** ADJUSTMENT *******************
**********************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

(E)

(E)

Press [3] key to select the MATRIX.

```
<< ADJUSTMENT OF BLUE MATRIX >>
ROUGH ADJUSTMENT
[U]             UP
[D]             DOWN

FINE ADJUSTMENT
[Ctrl] + [U]    UP
[Ctrl] + [D]    DOWN

[ENTER]         RETURN TO MENU
[ESC]           QUIT
```

Press the [D] key to minimize the yellow (YEL) level. Press the [U] key so the ratio between yellow (YEL) and blue (BLU) levels is 5:8
Press the [Ctrl] key and hold it down, then press the [U] and [D] keys so the ratio between yellow (YEL) and blue (BLU) levels is 5:8

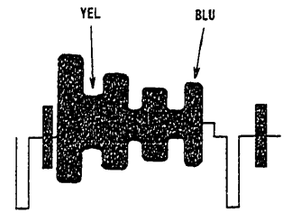
Press [ENTER] key, and the display changes as follows.

```
DATA WRITING TO EEPROM
```

```
ADJUSTMENT FINISHED
PRESS ANY KEY
```

Press any key to return to ADJUSTMENT MENU.

Waveforms



YEL : BLU
5 : 8

(200mV/50 μs.div.)

Fig. 2-19

(4) White Balance Adjustment

Purpose	To set white balance under the color temperature which becomes a reference for the auto white balance circuit.
Incompleted Phenomenon	·Color of the subject is different from that of the picture. ·A white subject is not seen as white.
Test Point	·Video Out (AV OUT)
Equipment/Jig	———
Condition	·Attach a C12 filter. ·Point at a gray scale chart (at wide-angle).

PROCEDURE

ADJUSTMENT MENU

```
************************************************
*************** ADJUSTMENT *********************
************************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

↓

Press [4] key to select the WHITE BALANCE.

↓

```
WHITE BALANCE ADJUSTMENT
INPUT DATA OF OFFSET  FOR R-B --> 00
```

↓

Press [0] [8] to input the data.

↓

Press [ENTER] key, and the display changes as follows.

↓ (F)

↓ (F)

```
WHITE BALANCE ADJUSTMENT
INPUT DATA OF OFFSET  FOR Mg-G --> 00
```

↓

Press [0] [0] to input the data.

↓

Press [ENTER] key, and the display changes as follows.

↓

```
WHITE BALANCE ADJUSTMENT
PLEASE WAIT A MOMENT
```

↓

```
WHITE BALANCE ADJUSTMENT
  ADJUSTMENT COMPLETED.
  COMPLETED EEPROM WRITING.
  PRESS ANY KEY
```

↓

Press any key to return to ADJUSTMENT MENU.

(5) Chroma Gain Adjustment (Figs. 2-20, 2-21)

Purpose	To set the color saturation under the reference color temperature.
Incompleted Phenomenon	·Color of the picture is denser than that of the subject. ·Color of the picture is lighter than that of the subject.
Test Point	·Video Out (AV OUT)
Equipment/Jig	·Oscilloscope (Vectorscope)
Condition	·Attach a C12 filter. ·Point at a color bar chart.

PROCEDURE

ADJUSTMENT MENU

```
************************************************
*************** ADJUSTMENT *********************
************************************************
        [1]   AUTO IRIS CONTROL
        [2]   KNEE
        [3]   MATRIX
        [4]   WHITE BALANCE
        [5]   CHROMA GAIN
        [ESC] RETURN TO MAIN MENU
Please select [1], [2], [3], [4], [5] or [ESC]
```

↓

Press [5] key to select the CHROMA GAIN.

↓

```
<< ADJUSTMENT OF CHROMA GAIN >>

ROUGH ADJUSTMENT
[U]            CHROMA GAIN UP
[D]            CHROMA GAIN DOWN

FINE ADJUSTMENT
[Ctrl] + [U]   CHROMA GAIN UP
[Ctrl] + [D]   CHROMA GAIN DOWN

[ENTER]        SAVE & RETURN TO MENU
[ESC]          QUIT
```

↓

WHEN USING AN OSCILLOSCOPE

Press the [U] and [D] keys to set the red level to around 400mVp-p.
Press the [Ctrl] button and hold it down, then press the [U] and [D] keys so the red level is 400mV ± 20mVp-p. (Fig. 2-20)

↓ (G)

↓ (G)

WHEN USING A VECTORSCOPE

Press the [U] and [D] keys to set the red vector to around 160% of the burst.
Press the [Ctrl] button and hold it down, then press the [U] and [D] keys so the red vector is 160% ± 5%. (Fig. 2-21)

↓

Press [ENTER] key, and the display changes as follows.

↓

```
DATA WRITING EEPROM
```

↓

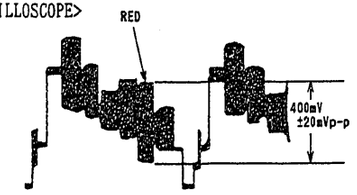
```
ADJUSTMENT FINISHED
PRESS ANY KEY
```

↓

Press any key to return to ADJUSTMENT MENU.

——— Waveforms ———

<OSCILLOSCOPE>



(100mV/20μs.div.)

Fig. 2-20

<VECTORSCOPE>

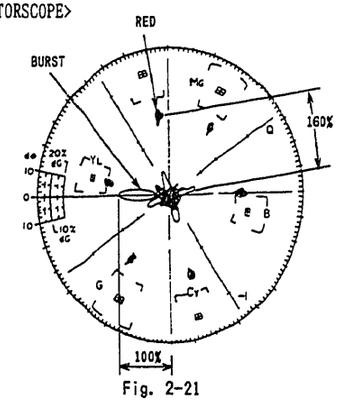


Fig. 2-21

7-6. Autofocus Adjustment Procedure

◆Before Starting Adjustment

- Be sure to perform this adjustment after replacing or initializing the lens block, parts in the VCA circuit board (EEPROM).

—— PROCEDURE ——

1) Start the MAP.

2) Press [D] to select AUTO FOCUS. (Figs. 2-22, 2-23.)

3) Select the number of the required adjustment.

—— NOTE ——

1. If [ESC] (escape) is pressed, the computer's display returns to Fig. 2-22 (MAIN MENU).
2. To complete adjustment, press the [ESC] (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

MAIN MENU

```
**************************************************
********* MANUAL ADJUSTMENT PROGRAM ************
**************************************************

          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END

Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 2-22

⬇

Press [D]

⬇

AF ADJ. MENU

```
**************************************************
*********** AUTO FOCUS ADJUSTMENT **************
**************************************************

     [1]   ADJUSTMENT OF ZOOM/FOCUS TRACKING
     [2]   ADJUSTMENT OF AF NOISE LEVEL
     [ESC] RETURN TO MENU

       Please select [1], [2] or [ESC]
```

Fig. 2-23

(1) Zoom Trace Adjustment

Purpose	·To set the out-of-focus correction level during zooming.
Incompleted Phenomenon	·Focus is lost during zooming.
Equipment/Jig	·Color Video Monitor ·Backfocus Chart
Test Point	·Video Out (AV OUT)
Condition	·Point at the backfocus chart, 1500±5 mm away from the lens surface. ·Light the chart with 200-400 lux.

Caution When Adjustment

1. Measure the distance between the chart and lens surface precisely.
2. Place the chart as parallel as possible to the lens surface.
3. The backfocus chart should always be at the center of the monitor screen when the zoom is set to the wide-angle and telephoto ends.
4. The zoom trace adjustment procedure is completed within 2 minutes after it is selected.
5. Do not place any obstruction between the lens and chart during adjustment.

PROCEDURE

AF ADJ. MENU

```
**************************************************
*********** AUTO FOCUS ADJUSTMENT **************
**************************************************

     [1]   ADJUSTMENT OF ZOOM/FOCUS TRACKING
     [2]   ADJUSTMENT OF AF NOISE LEVEL
     [ESC] RETURN TO MENU

       Please select [1], [2] or [ESC]
```

⬇

Press [1] key to select ADJUSTMENT OF ZOOM/FOCUS TRACKING

⬇

```
<ADJUSTMENT OF ZOOM/FOCUS TRACKING>
        |-------|-------|
        0%      50%     100%
```

⬇

```
<ADJUSTMENT OF ZOOM/FOCUS TRACKING>
        |=======|-------|
        0%      50%     100%
   ADJUSTMENT COMPLETED
   PRESS ANY KEY
```

⬇

Press any key to return to AF ADJ. MENU.

⬇

Turn the power off and then on again.

(2) AF Noise Level Adjustment

Purpose	·To set the noise level.
Incompleted Phenomenon	·It takes time until a subject is brought into focus.
Equipment/Jig	·Correct focus is not obtained. ·Color Video Monitor
Test Point	·Video Out (AV OUT)
Condition	·Set the focus to AUTO. ·Point at a light box without a chart inserted at a distance of up to 10cm.

Caution When Adjustment

1. Place the light box as parallel as possible to the lens surface.
2. The AF noise level adjustment procedure will be completed within thirty seconds after it is selected.

PROCEDURE

AF ADJ. MENU

```
**************************************************
*********** AUTO FOCUS ADJUSTMENT **************
**************************************************

     [1]   ADJUSTMENT OF ZOOM/FOCUS TRACKING
     [2]   ADJUSTMENT OF AF NOISE LEVEL
     [ESC] RETURN TO MENU

       Please select [1], [2] or [ESC]
```

⬇

Press [2] key to select ADJUSTMENT OF AF NOISE LEVEL.

⬇

```
<ADJUSTMENT OF AF NOISE LEVEL>
        |-------|-------|
        0%      50%     100%
```

⬇

```
<ADJUSTMENT OF AF NOISE LEVEL>
        |=======|-------|
        0%      50%     100%
   ADJUSTMENT COMPLETED
   PRESS ANY KEY
```

⬇

Press any key to return to AF ADJ. MENU.

⬇

Turn the power off and then on again.

7-7. Stabilizer Adjustment Procedure

◆Before Starting Adjustment

- Be sure to perform this adjustment after replacing or initializing the SPE circuit board and VCA circuit board (EEPROM).
- This item describes how to rewrite the stabilizer data. The average of the stabilizer data will be written.

—— PROCEDURE ——

1) Start the MAP.

—— NOTE ——

1. If ESC (escape) is pressed, the computer's display returns to MAIN MENU.
2. To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

2) Press F to select EIS.

3) Press Y key.

—— NOTE ——

1. If N is pressed, the computer's display returns to MAIN MENU.
2. If a key other than Y or N is pressed, "PLEASE SELECT (Y/N)?" is displayed.

4) The stabilizer data is rewritten automatically.

5) Press any key to return to MAIN MENU.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

↓ Press F

```
<<DATA WRITING>>
START TO SEND DATA          (Y/N)
```

↓ Press Y

```
FINISHED WRITING DATA.
PRESS ANY KEY
```

↓ Press any key to return to MAIN MENU.

7-8. SPOT NOISE ADJUSTMENT PROCEDURE

◆Before Starting Adjustment

- The spot noise is identified as the fine white noise that appears when the lens cap is attached after the power is turned on.
- Perform this adjustment only for products with which spot noise occurs. (However, there is no problem even if products free from spot noise are adjusted.)
- After replacing the CCD image sensor or VCA circuit board (EEPROM), check whether or not spot noise occurs and then proceed with adjustment.

—— PROCEDURE ——

1) Start the MAP.

—— NOTE ——

1. If ESC (escape) is pressed, the computer's display returns to MAIN MENU.
2. To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recoder and jig.

2) Cap the lens

3) Connect the color video monitor to video out.

4) Press G key to select SPOT NOISE.

—— NOTE ——

·The adjustment procedure in this item is different depending on the amount of spot noise.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

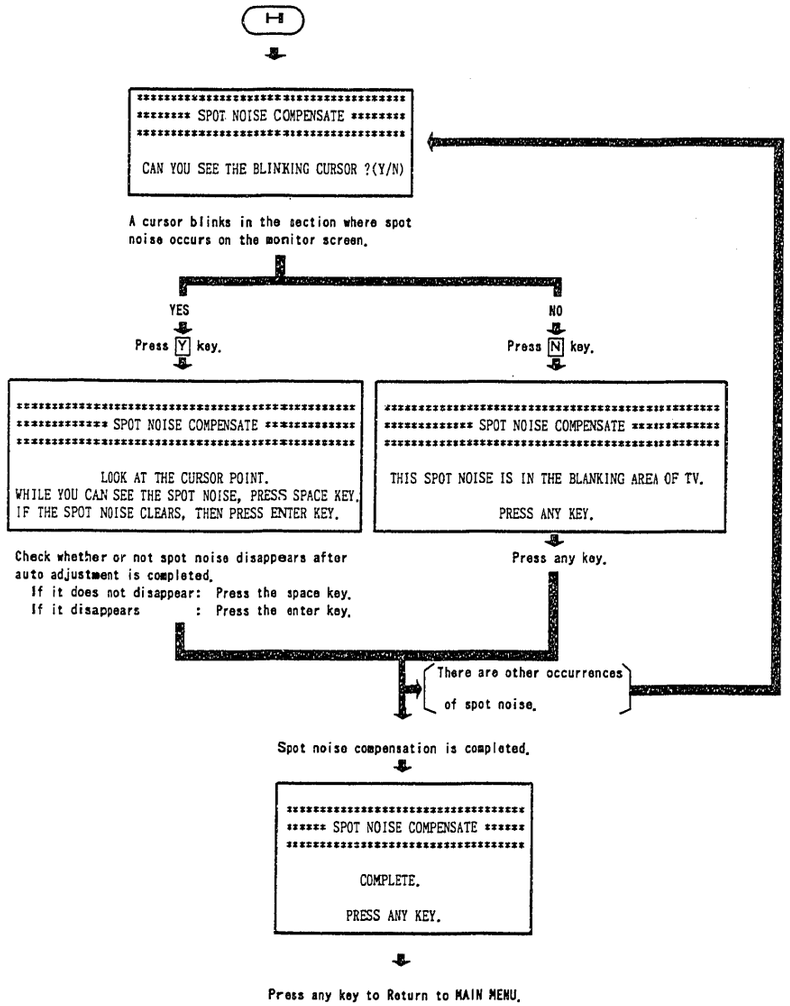
↓ Press G

Note: The amount of spot noise is displayed in place marked ×.

One spot noise	Much spot noise	Spot noise is not detected (when products free from spot noise are adjusted)
********** **** SPOT NOISE COMPENSATE **** **********	********** ***** SPOT NOISE COMPENSATE **** **********	********** ***** SPOT NOISE COMPENSATE **** **********
A SPOT NOISE FOUND. PRESS ANY KEY.	× SPOT NOISE FOUND PRESS ANY KEY.	CAN NOT FIND THE SPOT NOISE. PRESS ANY KEY.
		↓ Press any key to return to MAIN MENU.

↓ Press any key.

(H)


H
******** SPOT NOISE COMPENSATE ********
CAN YOU SEE THE BLINKING CURSOR ?(Y/N)
A cursor blinks in the section where spot noise occurs on the monitor screen.
YES
Press Y key.
NO
Press N key.
********** SPOT NOISE COMPENSATE **********
LOOK AT THE CURSOR POINT.
WHILE YOU CAN SEE THE SPOT NOISE, PRESS SPACE KEY.
IF THE SPOT NOISE CLEARS, THEN PRESS ENTER KEY.
********** SPOT NOISE COMPENSATE **********
THIS SPOT NOISE IS IN THE BLANKING AREA OF TV.
PRESS ANY KEY.
Press any key.
Check whether or not spot noise disappears after auto adjustment is completed.
If it does not disappear: Press the space key.
If it disappears : Press the enter key.
There are other occurrences of spot noise.
Spot noise compensation is completed.
****** SPOT NOISE COMPENSATE ******
COMPLETE.
PRESS ANY KEY.
Press any key to Return to MAIN MENU.

8. ELECTRONIC VIEWFINDER (EVF) ADJUSTMENT

8-1. CRT EVF Adjustment

Adjustment Parts Locations

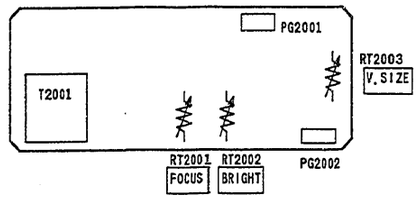


Fig. 2-22 Electronic Viewfinder (EMQ) Circuit Board (SIDE-A)

(1) Deflection Yoke Position, EVF Centering Adjustment

Purpose	·This adjustment procedure eliminates picture tilt in the EVF display. ·This adjustment centers the image observed by the camera in the EVF display.		
Equipment/Jig	Test Points	Condition	Adjustment Points
·EVF Display		·Aim the resolution chart.	·DEFLECTION YOKE (Deflection Yoke Position) ·CENTRING MAGNETS (EVF Centring)

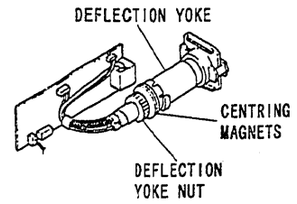
Adjustment Procedure

<Deflection Yoke Position>
1) Loosen the deflection yoke nut.
2) Turn the deflection yoke so that the EVF picture (chart) is horizontal, matching the edges of the CRT.

Note: (After adjustment is completed, tighten the deflection yoke nut.)

<EVF Centring>
1) Remove the locking paint from the centring magnet.
2) Adjust the centring magnets until the center of the picture viewed by the camera is positioned in the center of the EVF display.

Adjustment Points



(2) EVF Vertical Size Adjustment (Fig. 2-22)

Purpose	This adjustment determines the vertical size of the image appearing in the EVF display.			
Equipment/Jig	Test Points	Condition	Adjustment Points	
·EVF Display		·Aim the resolution chart.	·RT2003 (V.SIZE)	EMQ

Adjustment Procedure

1) RT2003: Set the top and bottom edges of the chart match the top and bottom edges of the CRT.

(3) EVF Brightness Adjustment (Fig. 2-22)

Purpose	This adjustment sets the brightness of the picture in the EVF display.			
Equipment/Jig	Test Points	Condition	Adjustment Points	
·EVF Display		·Aim the resolution chart.	·RT2002 (BRIGHT)	EMQ

Adjustment Procedure

1) RT2002: Set to optimize the EVF picture.

(4) EVF Focus Adjustment (Fig. 2-22)

Purpose	This control adjusts for optimum focus of the electronic viewfinder picture.			
Equipment/Jig	Test Points	Condition	Adjustment Points	
·EVF Display		·Aim the resolution chart.	·RT2001 (FOCUS)	EMQ

Adjustment Procedure

1) RT2001: Set the EVF picture is clear.

8-2. LCD EVF Adjustment

Adjustment Parts Locations

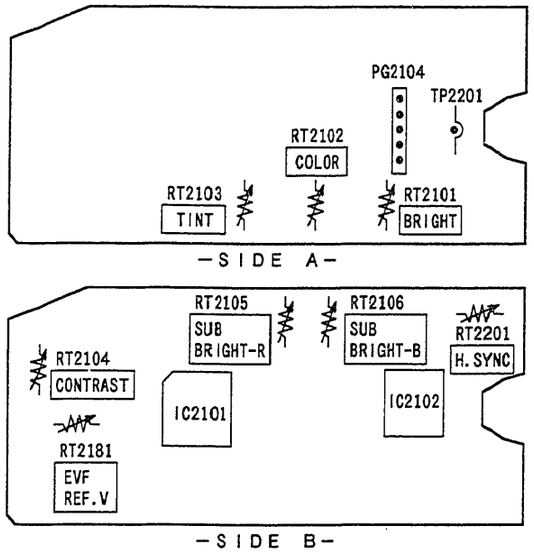


Fig. 2-23 Color EVF (CRE) Circuit Board

(1) Output Voltage Adjustment (Fig. 2-23)

Equipment/Jig	Test Points	Condition	Adjustment Points
·DVM	·PG2104-5 CRE	———	·RT2181 (EVF REF.V) CRE
Adjustment Procedure			
1) RT2181: Set the DVM reads 12.0V ± 0.1V.			

(2) H.Drive Frequency Adjustment (Fig. 2-23)

Equipment/Jig	Test Points	Condition	Adjustment Points
·DVM	·TP2201 CRE	———	·RT2201 (H.PULSE) CRE
Adjustment Procedure			
1) RT2201: Set the DVM reads 2.5V ± 0.1V.			

(3) Brightness, Contrast Adjustment (Fig. 2-23)

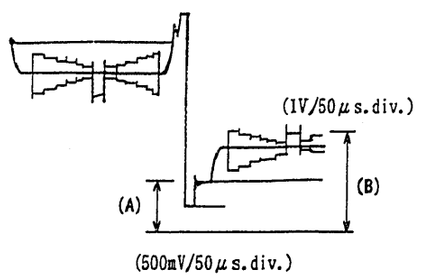
Equipment/Jig	Test Points	Condition	Adjustment Points
·Osilloscope (DC mode)	·PG2104-4 CRE	·Aim at the gray scale chart	·RT2101 (BRIGHT) CRE ·RT2104 (CONTRAST) CRE

Adjustment Procedure

<BRIGHT>
1) RT2101: Set the section (A) in the waveform is 2.5±0.1Vp-p.

<CONTRAST>
1) RT2104: Set the section (B) in the waveform is 4.7±0.1Vp-p.

Waveforms



(4) Sub-Bright Adjustment (Fig. 2-23)

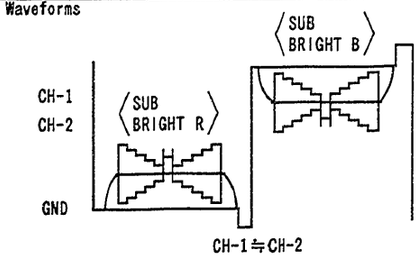
Equipment/Jig	Test Points	Condition	Adjustment Points
·Osilloscope (DC mode)	·CH-1: PG2104-4 CRE ·CH-2: PG2104-3 CRE (SUB BRIGHT B) PG2104-2 CRE (SUB BRIGHT R)	·Aim at the gray scale chart	·RT2106 CRE (SUB BRIGHT B) ·RT2105 CRE (SUB BRIGHT R)

Adjustment Procedure

<SUB BRIGHT B>
1) Match the 0V DC between CH-1 and CH-2
2) RT2106: Match the CH-1 and CH-2 waveforms. If the CH-1 and CH-2 waveforms do not match, shape each waveform.

<SUB BRIGHT R>
1) Match the 0V DC between CH-1 and CH-2
2) RT2105: Match the CH-1 and CH-2 waveforms. If the CH-1 and CH-2 waveforms do not match, shape each waveform.

Waveforms



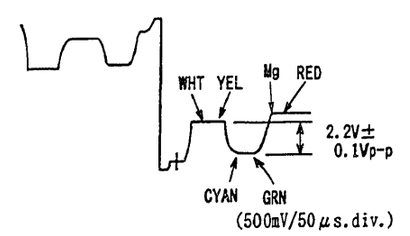
(5) Chroma Gain and Color Phase Adjustment (Fig. 2-23)

Equipment/Jig	Test Points	Condition	Adjustment Points
·Osilloscope	·PG2104-2 CRE	·Aim at the color bar chart (Input the full color bar signal.)	·RT2102 (COLOR) CRE ·RT2103 (TINT) CRE

Adjustment Procedure

1) Adjust RT2103 to minimize the fluctuations the waveform.
2) Adjust RT2102 so the difference in the level between yellow and cyan is 2.2V ± 0.1Vp-p.

Waveforms



3. VCR SECTION ADJUSTMENT

1. CIRCUIT BOARD LOCATIONS

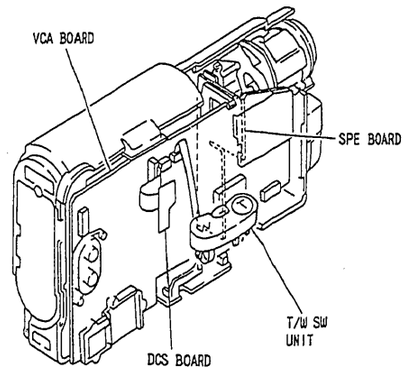


Fig. 3-1

2. TEST EQUIPMENT AND ALIGNMENT TAPES NECESSARY FOR ADJUSTMENT

1) Test Equipment
- Oscilloscope (dual trace)
- Digital Voltmeter (DVM)
- Frequency Counter
- Millivoltmeter
- Color Video Monitor
- Color Bar Generator

2) Alignment Tape, etc.
- Adjustment Floppy Disk
- Personal Computer
- Personal Computer 9-pin or 25-pin (RS232C) Cable
- DSP-R Jig
- DSP AV Output Cable
- Alignment Tape (20HSC-3)
- Blank Tape
- ATF-R Jig
- DC Power Supply (DC 0~7V/3A)
- DC Power Supply (DC 5V/1A)

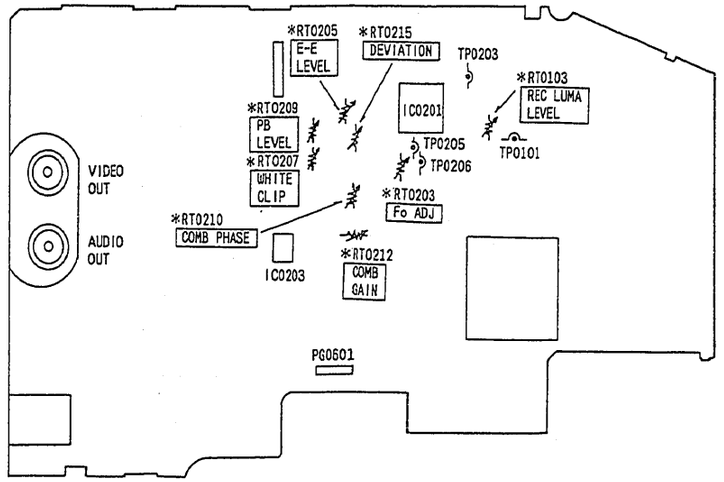
3. ADJUSTMENT CONDITION

1) Check that the camera section has been adjusted correctly before adjusting the VCR section.
2) Connect this unit, a power supply and a color video monitor as shown in Fig. 1-1.
3) Use the 10:1 probe of the oscilloscope when other not specified.
4) When "Record mode" is specified, load a blank tape and set the 8mm video camera/recorder to the record mode by the following procedure.
   ① Set the CAMERA/OFF/VIDEO switch to the CAMERA position.
   ② Press the REC START/STOP button on the unit (or REC START/STOP button on the remote control).
5) Before adjusting the resistors marked with asterisks (*) in the following text, remove the corresponding laser trimming resistors to replace them with the specified semi-variable resistors.
6) Before unsoldering laser trimming resistors be sure to confirm each adjustment value. Remove only the resistors used in the adjustment items that should be adjusted.
7) Earth of test equipment: Pre-Amp Shield (GND).

4. PRESET POSITIONS OF SWITCHES AND CONTROLS DURING ADJUSTMENT

- CAMERA/OFF/VIDEO switch ..... "VIDEO" position
- TITLE ..... Not Display mode

5. ADJUSTMENT COMPONENTS LOCATIONS

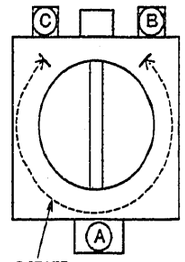
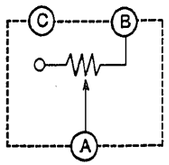


NOTE
- Variable resistors marked "*" are laser trimming resistor.
- Test point (TP) are not actually provided on the circuit board.

Fig. 3-2 Main (VCA) Circuit Board [SIDE A]

Table. 3-1 SEMI-VARIABLE RESISTORS TABLE

ADJUST POINT	SEMI-VARIABLE RESISTOR (Ω)	CIRCUIT BOARD	Name of Adjustment
RT0103	2.2K	VCA	REC LUMA LEVEL
RT0203	22K		Fo ADJ
RT0205	10K		E-E LEVEL
RT0209	22K		PB LEVEL
RT0210	470		COMB PHASE
RT0212	2.2K		COMB GAIN
RT0215	10K		DEVIATION
RT0207	22K		WHITE CLIP

Adjust The Range		Installation Method
		1) Remove the laser trimming resistor and attach the specified semi-variable resistor.

6. CHECK AFTER REPLACING MAJOR COMPONENTS IN THE VCR SECTION

After replacing major components, perform checks, referring to the table below.
The following table shows the minimum adjustments required after major components are placed.
The table below may not apply when several components are replaced, depending on the symptom of the defect.

Note: After replacing the parts, check each adjustment. If you find the items necessary to be adjusted, remove the corresponding laser trimming resistors and replace them with variable resistors for adjustment.

ITEM No.	NAME OF ADJUSTMENT	NAME OF MAJOR COMPONENTS					
		VCA BOARD	CYLINDER	IC901	IC201	IC202	
	SYSTEM CONTROL/SERVO CIRCUITS ADJUSTMENT						
(1)	Power Shut Off Level Adjustment	●		●			
(2)	Head Switching Point Adjustment	●	●	●			
	LUMINANCE/CHROMA CIRCUIT ADJUSTMENT						
(1)	Comb Filter Adjustment				●	●	
(2)	E-E Video Signal Level Adjustment				●		
(3)	White Clip Adjustment				●		
(4)	Carrier Frequency Adjustment				●		
(5)	Deviation Adjustment				●		
(6)	Record Luminance level Adjustment				●		
(7)	Playback Luminance Level Adjustment				●		

7. SYSTEM CONTROL/SERVO CIRCUIT ADJUSTMENT

◆ Before Starting Adjustment

- System control adjustment also needs a personal computer. Connect the camera/recorder, jigs, power supply, etc. in the same way as in Digital Adjustment.
- Be sure to perform this adjustment after replacing or initializing the EEP ROM and VCA circuit board (EEPROM).
- When an error message appears during adjustment, refer to "4. Error Messages".
- If ESC (escape) is pressed, the computer's display returns to Fig. 3-3 (MAIN MENU).
- To complete adjustment, press the ESC (escape) key twice to restore the MS-DOS screen and then turn off the camera/recorder and jig.

——— PROCEDURE ———

1) Start the MAP.

2) Press E to select VCR ADJUSTMENT. (Figs. 3-3, 3-4)

3) Select the number of the required adjustment.

MAIN MENU

```
**********************************************
********* MANUAL ADJUSTMENT PROGRAM ***********
**********************************************
          [A]   DATA INITIALIZE
          [B]   ELECTRIC VOLUME
          [C]   ADJUSTMENT
          [D]   AUTO FOCUS
          [E]   VCR ADJUSTMENT
          [F]   EIS
          [G]   SPOT NOISE
          [ESC] END
Please select [A], [B], [C], [D], [E], [F], [G]
              or [ESC]
```

Fig. 3-3

↓

Press E

↓

VCR ADJ. MENU

```
**********************************************
************ VCR ADJUSTMENT ******************
**********************************************
    [1]   ADJUSTMENT OF ODC
    [2]   ADJUSTMENT OF SWITCHING POINT
    [ESC] RETURN TO MAIN MENU
      Please select [1],[2] or [ESC]
```

Fig. 3-4

(1) Power Shut Off Level (ODC: Over Discharge) Adjustment

Purpose	• To set the minimum voltage required to opreate the camera/recorder.			
Incompleted Phenomenon	• The usable time of the battery becomes short. • The camera/recorder doesn't operate normally.			
Equipment/Jig	Test Points Connection Points		Condition	Adjustment Points
•DVM	•PG0551-8 (GND) •PG0551-1	VCA VCA	•Load the brank tape •Supply power (7.0±0.5V) to PG0551-1	
•DC Power Supply (0~7V)	•PG0551-8 (GND) •PG0551-1	VCA VCA		
•Blank Tape				

Adjustment Procedure

VCR ADJ. MENU

```
**********************************************
************ VCR ADJUSTMENT ******************
**********************************************
    [1]   ADJUSTMENT OF ODC
    [2]   ADJUSTMENT OF SWITCHING POINT
    [ESC] RETURN TO MAIN MENU
      Please select [1],[2] or [ESC]
```

↓

Press 1 key to select the ADJUSTMENT OF ODC.

↓

```
<< SET UP OF ODC ADJUSTMENT STARTED >>
SET POWER SOURCE AT 5.60 (+/- 0.05) V.
        START ADJUSTING.

      PRESS ANY KEY.
```

↓ ①

① ↓

Set the voltage of PG0551-1 to 5.60V±0.05V

↓

Press any key, and the display changes as follows.

↓

```
SETUP OF ODC ADJUSTMENT COMPLETED
ODC ADJUSTMENT STARTED
FINISHED WRITING DATA
ADJUSTMENT FINISHED
PRESS ANY KEY
```

↓

Press any key to return to VCR ADJ. MENU.

(2) Head Switching Point Adjustment (Fig. 3-2)

Note: Be sure to perform this adjustment after replacing the cylinder assembly and VCA circuit board.

Purpose	• To set the switching point of the video heads during playback.		
Incompleted Phenomenon	• Vertical jitter occurs. • Switching noise appears across the bottom of the monitor screen.		
Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
•Alignment Tape		•Playback the alignment tape.	

Adjustment Procedure

VCR ADJ. MENU

```
**********************************************
************ VCR ADJUSTMENT ******************
**********************************************
    [1]   ADJUSTMENT OF ODC
    [2]   ADJUSTMENT OF SWITCHING POINT
    [ESC] RETURN TO MAIN MENU
      Please select [1],[2] or [ESC]
```

↓

Press 2 key to select the ADJUSTMENT OF SWITCHING POINT.

↓

```
<< SET UP OF SW POINT ADJUSTMENT STARTED >>
<< SET UP OF SW POINT ADJUSTMENT COMPLETED >>
```

↓ ②

② ↓

```
<< SW POINT ADJUSTMENT STARTED >>
```

↓

```
<< SW POINT ADJUSTMENT DATA CHECKING >>
<< ADJUSTMENT DATA WRITING STARTED >>
<< ADJUSTMENT DATA WRITING COMPLETED >>
PRESS ANY KEY
```

↓

Turn the Power off.

↓

Press any key to return to VCR ADJ. MENU.

8. LUMINANCE/CHROMA CIRCUIT ADJUSTMENT

(1) Comb Filter Adjustment (Fig. 3-2)

Purpose	· To set the characteristic of the comb filter.
Incompleted Phenomenon	· Jamming occurs at the edges. · The chroma S/N deteriorates.

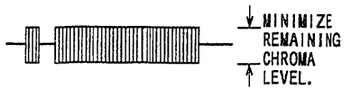
Equipment/JIG	Test Points Connection Points	Condition	Adjustment Points
·Oscilloscope ·Color Bar Generater ·Blank Tape	·TP0203 VCA ·Video IN (AV IN)	·Input the color bar signal. ·STOP mode	*RT0212 VCA (COMB GAIN) *RT0210 VCA (COMB PHASE)

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT0212, RT0210: Set the chroma components to minimize the residual.

〈Settings of oscilloscope〉
·Trigger with video signal.

Waveforms



(50mV/50μs.div.)

(2) E-E Video Sigan1 Level Adjustment (Fig. 3-2)

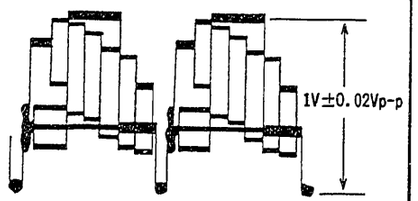
Purpose	· To set the video output level in the E-E mode.
Incompleted Phenomenon	· The picture becomes dark or whitish in the E-E mode.

Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
·Oscilloscope ·Color Bar Generator ·Blank Tape	·Video Out (AV OUT) ·Video In (AV IN)	·Input the color bar signal. ·Stop mode	*RT0205 VCA (E-E LEVEL)

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT0205: Set the video output level to 1V±0.02Vp-p

Waveforms



(200mV/20μs.div.)

(3) White Clip Adjustment (Fig. 3-2)

Purpose	· To set the white clip level.
Incompleted Phenomenon	· No color apperrs in the highly bright subject.

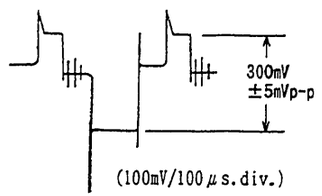
Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
·Oscilloscope ·Color Bar Generator ·Blank Tapes	·TP0205 VCA ·Video IN (AV IN)	·Input the color bar signal. ·Stop mode	*RT0207 VCA (WHITE CLIP)

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT0207: Set the white clip level to 300mV±5mVp-p

〈Settings of oscilloscope〉
·Trigger with video signal.

Waveforms



(100mV/100μs.div.)

(4) Carrier Frequency Adjustment (Fig. 3-2)

Purpose	· To set the modulation frequency at the sync tip of the FM modulator to the specified value.
Incompleted Phenomenon	· Black and white are inverted in the picture.

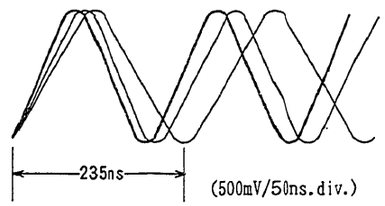
Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
·Oscilloscope ·Color Bar Generator ·Blank Tapes	·TP0101 VCA ·Video In (AV IN)	·Input the white (100%) signal. ·Stop mode.	*RT0203 VCA (Fo ADJ)

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT0203: Set the period of the widest pulse is 235ns ± 3ns.

〈Setting of oscilloscope〉
·Trigger the osilloscope

Waveforms



(500mV/50ns.div.)

(5) Deviation Adjustment (Fig. 3-2)

Purpose	· To set the modulation frequency at the white peak of the FM modulator to the specified value.
Incompleted Phenomenon	· The picture becomes dark or whitish during recording and playback.

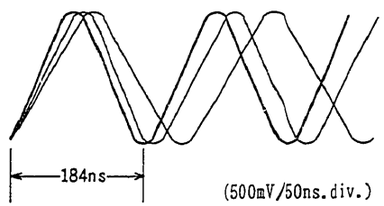
Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
·Oscilloscope ·Color Bar Generator ·Blank Tapes	·TP0101 VCA ·Video In (AV IN)	·Input the white (100%) signal. ·Stop mode.	*RT0215 VCA (DEVIATION)

Adjustment Procedure

1) Load the blank tape for normal 8.
2) RT0215: Set the period of the narrowest pulse is 184ns ± 2ns.

〈Setting of oscilloscope〉
·Trigger the osilloscope

Waveforms



(500mV/50ns.div.)

(6) Record Luminance Level Adjustment (Fig. 3-2)

Purpose	• To set the luminance signal to the specified value.
Incompleted Phenomenon	• The luminance S/Ns diteriorate. • Cross-beats appear on the monitor screen. • Black and white are inverted in picture.

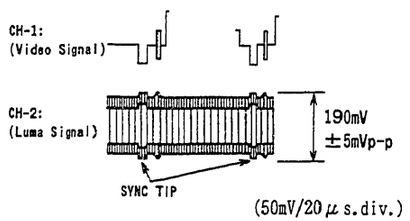
Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
•Oscilloscope •Color Bar Generator •ATF-R Jig (SW3:ON) •Blank Tape	•CH-1: Video Out (AV OUT) CH-2: TP0101(REC Y) VCA •Video In (AV IN) •PG0601 VCA	•Input the color bar signal.	*RT0103 VCA (REC LUMA LEVEL)

Adjustment Procedure

1) Load the blank tape for normal 8.
2) Connect the ATF-R jig to PG0601 and turn the power off.
3) turn the power switch off and hold the STOP button depressed, then supply power.
4) Set the unit to the loading state.
5) RT0103: Set the sync tip section in record luminance signal is 190mV ± 5mVp-p.

<Setting of oscilloscope>
•Trigger with video signal.

Waveforms



(7) Playback Luminance Level Adjustment (Fig. 3-2)
Note: Perform this adjustment after completing the record luminance level adjustment.

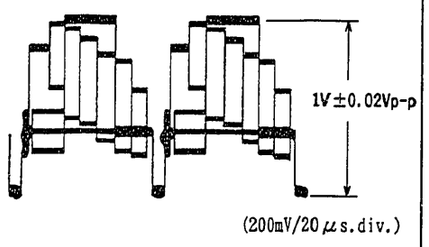
Purpose	• To set the luminance playback level to the specified value.
Incompleted Phenomenon	• The picture becomes dark or whitish during playback.

Equipment/Jig	Test Points Connection Points	Condition	Adjustment Points
•Oscilloscope •Blank Tape •Color Bar Generator	•Video Out (AV OUT)	•Record color bar signal and play it back with same VCR.	*RT0209 VCA (PB LEVEL)

Adjustment Procedure

1) RT0209: Set the playback luminance level to 1V±0.02Vp-p

Waveforms



4. ERROR MESSAGES

1. Camera Electric Volume and Digital Adjustments

Error Message	Countermeasure
ERROR OCCURRED. IRIS TROUBLE PRESS ANY KEY	• Check whether or not power is supplied. • Check the values of the iris drive circuit. • Defective soldering, damage to pattern, etc. in the above circuit • Check the iris block and replace it if necessary.
ERROR OCCURRED ON dax ADJUSTMENT PRESS ANY KEY	• Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
D RANGE OVER. ERROR ON dax ADJUSTMENT PRESS ANY KEY	• Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ON da0 and da1 ADJUSTMENT PRESS ANY KEY	• Check the values in the hall amp circuit and its peripheral circuits. • Defective soldering, damage to pattern, etc. in the above circuits.
FILE NOT FOUND !!!! PRESS ANY KEY	• The adjustment program (file) cannot be found. • Check the adjustment floppy disk and replace it if necessary.
FILE OPEN ERROR !!!! PRESS ANY KEY	• The adjustment program (file) does not start. • Check the adjustment floppy disk and replace it if necessary.
ERROR OCCURRED ON C DUTY ADJUSTMENT PRESS ANY KEY	• Check the values of the iris drive circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED ON FDET ADJUSTMENT PRESS ANY KEY	• Supply power again and re-adjust. • Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.
ERROR OCCURRED. ZOOM DOES NOT WORK PRESS ANY KEY	• Supply power again and re-adjust.
TOO BRIGHT PRESS ANY KEY	• The subject is too bright. • Move the camera further away from the light box.
TOO DARK PRESS ANY KEY	• The subject is too dark. • Check the light box. • Move the camera closer to the light box.
D RANGE OVER ERROR ON HALL AMP IRIS CANNOT OPEN ANY MORE PRESS ANY KEY	• Supply power again and re-adjust. • The subject is too dark. • Check the light box. • Move the camera closer to the light box. • Check the values in the hall amp circuit. • Defective soldering, damage to pattern, etc. in the above circuit.

Error Message	Countermeasure
STAURATION ERROR. TOO BRIGHT PRESS ANY KEY	• The subject is too bright. • Move the camera further away from the light box.
CAN'T ADJUST WHITE BALANCE PLEASE RETRY PRESS ANY KEY	• The subject is too bright or too dark. • Check the light box. • Move the camera closer to or away from the light box. • Supply power again and re-adjust.

2. Autofocus Adjustment

Error Message	Countermeasure
TIME OUT ERROR ON FOCUS	• Check the conditions of subject. • If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON ZOOM	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
TIME OUT ERROR ON AF STEP	• Check the conditions of subject. • If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
AF LIMIT OVER	• Check the conditions of subject. • If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (2) of TROUBLESHOOTING OF AUTOFOCUS.
AF ERROR	• If this error message appears even when the adjustment is performed 2 or 3 times, the autofocus circuit system is defective. • Refer to (1) of TROUBLESHOOTING OF AUTOFOCUS.
TOO DARK	• Insufficient lighting. Check the subject.

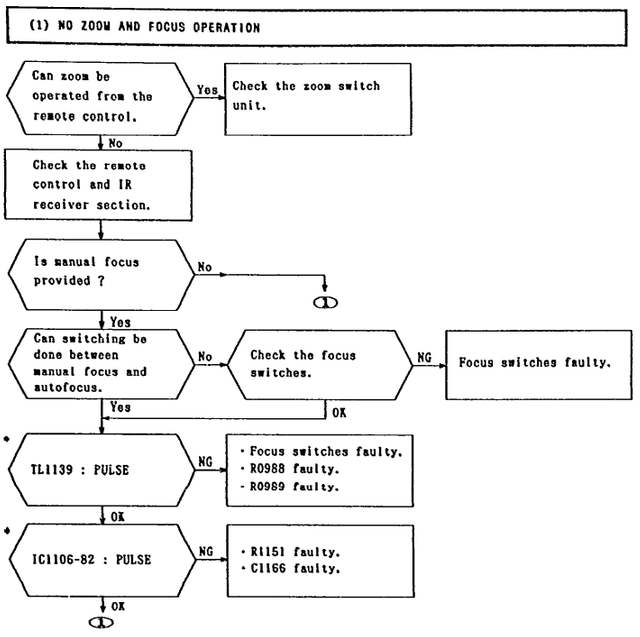
3. Spot Noise Adjustment

Error Message	Countermeasure
ERROR!! SPOT NOISE COMPENSATION IS STOPPED BY INITIAL DATA. PLEASE CHECK THE EEPROM. PRESS ANY KEY.	• Spot noise compensation is inhibited by the data in the EEPROM • Turn the power on again. • Data in the EEPROM is defective. (Initialize it.) • Check the EEPROM, and if necessary, replace it.
ERROR!! THRESHOLD DATA ERROR. PLEASE CHECK THE EEPROM. PRESS ANY KEY.	• Turn the power on again. • Data in the EEPROM is defective. (Initialize it.) • Check the EEPROM, and if necessary, replace it.

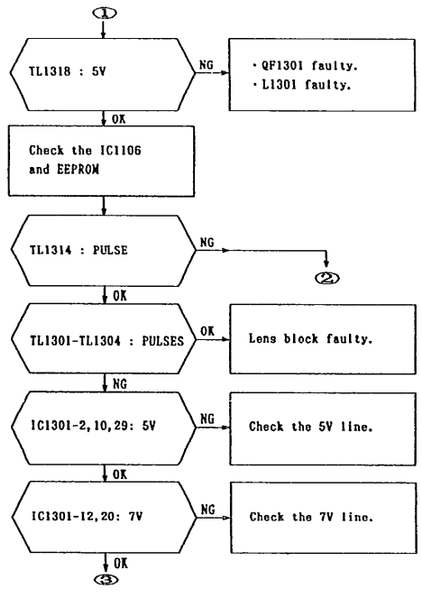
Error Message	Countermeasure
ERROR!! THE SPOT NOISE IS TOO MANY. CAN'T COMPENSATE ANY MORE. PRESS ANY KEY.	• The amount of spot noise that can be compensated reaches the limit. • Turn the power on again. • Check the CCD image sensor, and if necessary, replace it.

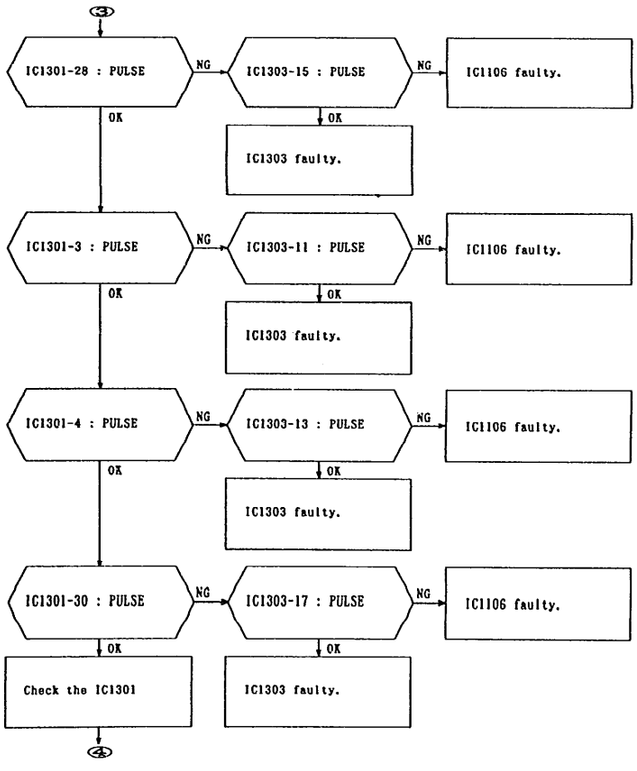
4. VCR Adjustment

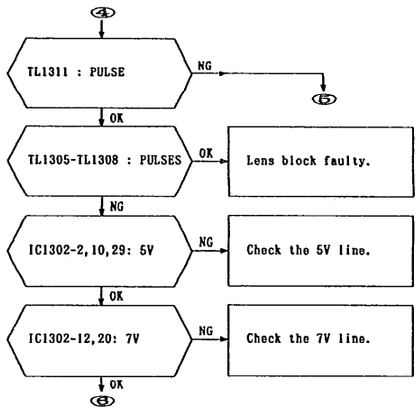
Error Message	Countermeasure
ERROR : SWP TEST.DAT FILE NOT FOUND !	• The adjustment program cannot be found. • Check the adjustment floppy disk and replace it if necessary.
ERROR : INVALID MODEL PRESS ANY KEY	• A wrong model has been selected. • The adjustment program cannot be found. • Check the adjustment floppy disk and replace it if necessary.
THIS MODEL NEED NOT BE ADJUSTED PRESS ANY KEY	• A wrong model has been selected. • A product that needs analog adjustment is connected.
ADJUSTMENT INCOMPLETED PRESS ANY KEY	• The value set by adjustment defective. • Re-adjust. • Check cylinder. • Check the alignment tape. • Check whether or not the usual operation is done correctly
RETRY ADJUSTING. PRESS ANY KEY	• Supply power again and re-adjust.
CAMERA IS NOT READY	• Check whether or not power is supplied.
ERROR OCCURRED CAN'T PLAY BACK PRESS ANY KEY	• No playback video. • Check the playback signal.
ERROR OCCURRED NO V.SYNC FOUND PRESS ANY KEY	• Vertical sync loss. • Check the vertical sync signal.
INVALID MODEL PRESS ANY KEY	• A wrong model has been selected. • The adjustment program cannot be found. • Check the adjustment floppy disk and replace it if necessary.
ERROR OCCURRED CAN'T RECORD PRESS ANY KEY	• No video recording. • Check the recording signal.

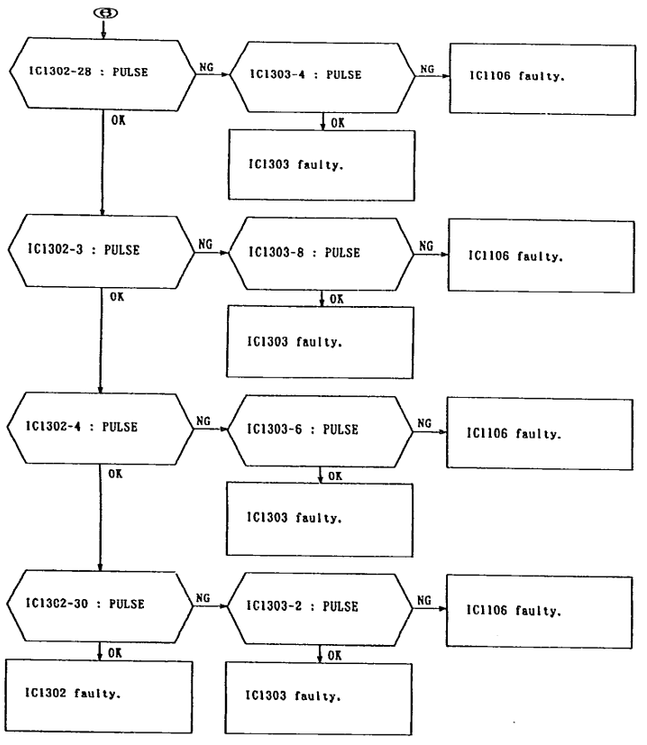


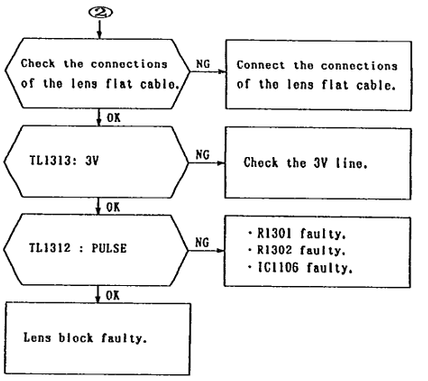
Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.

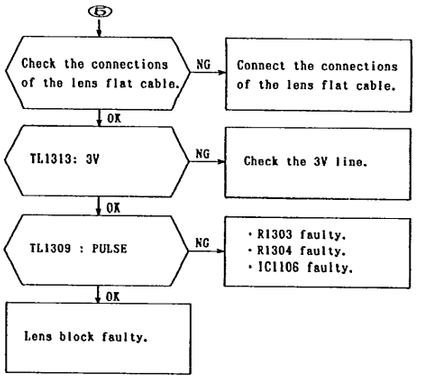


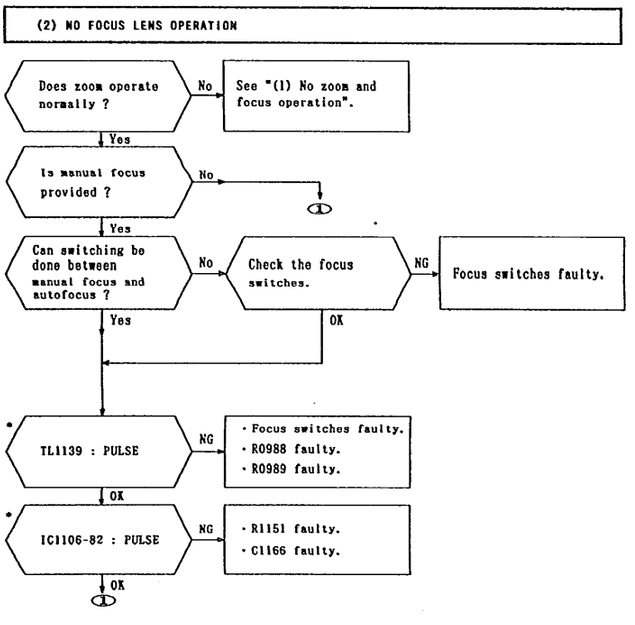




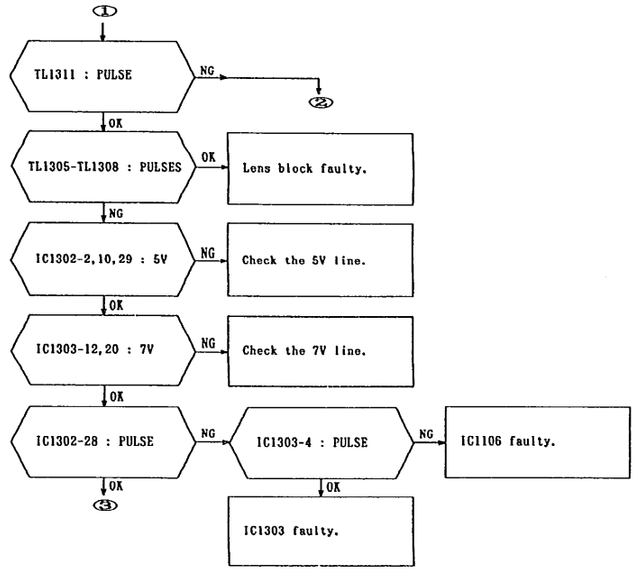


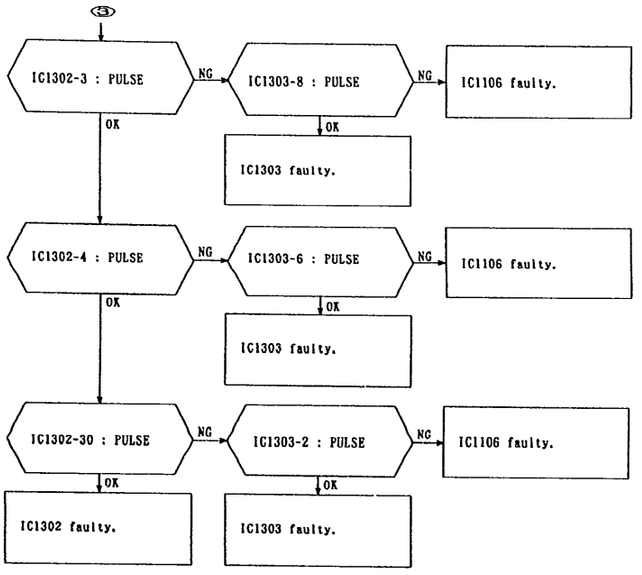


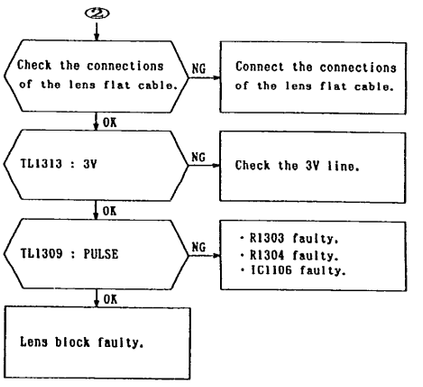


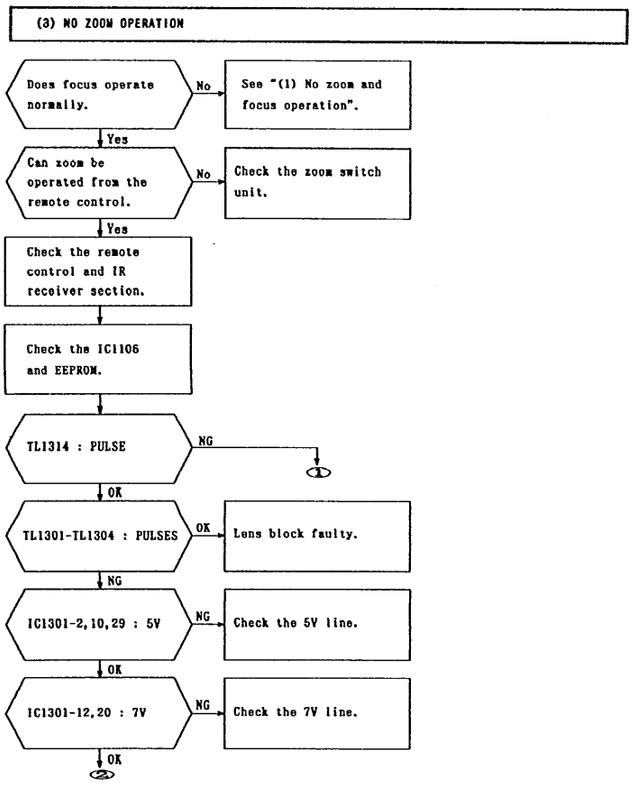


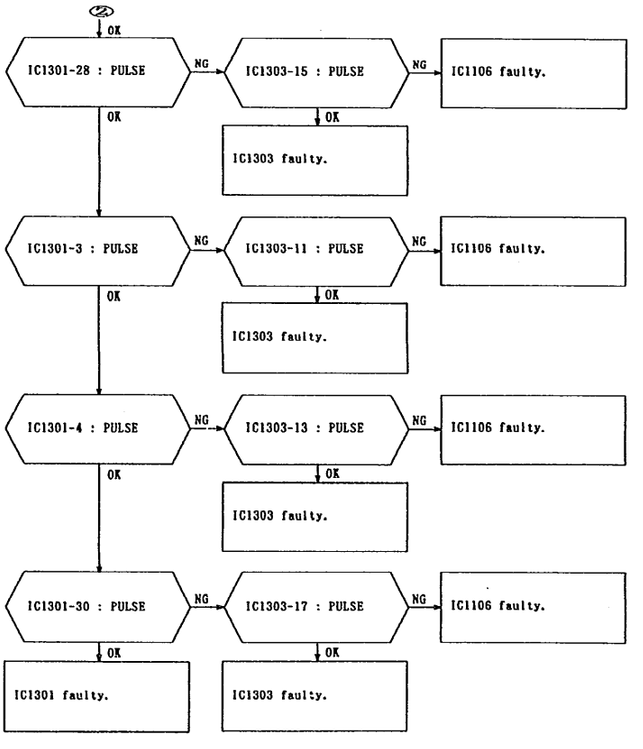
Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.

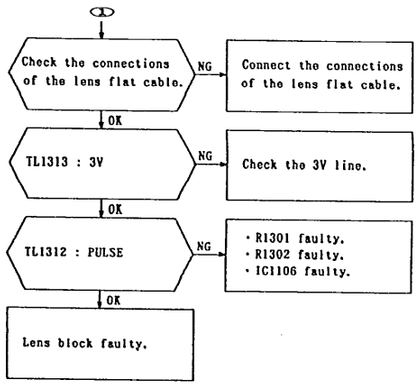


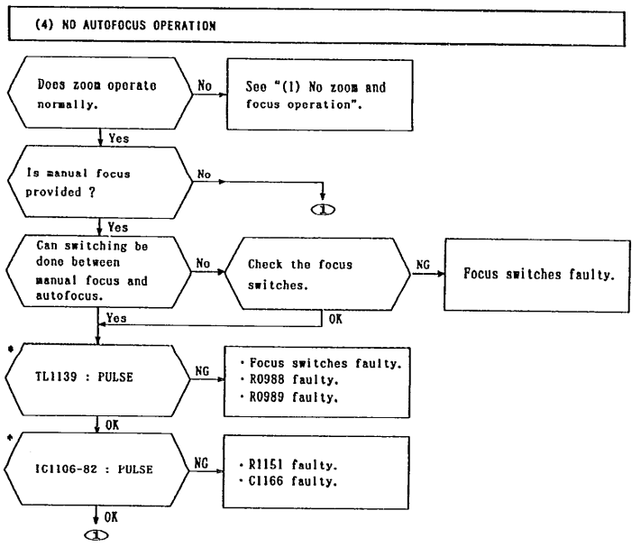

③
IC1302-3 : PULSE
NG
IC1303-8 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1302-4 : PULSE
NG
IC1303-6 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1302-30 : PULSE
NG
IC1303-2 : PULSE
NG
IC1106 faulty.
OK
OK
IC1302 faulty.
IC1303 faulty.


②
Check the connections of the lens flat cable.
NG
Connect the connections of the lens flat cable.
OK
TL1313 : 3V
NG
Check the 3V line.
OK
TL1309 : PULSE
NG
· R1303 faulty.
· R1304 faulty.
· IC1106 faulty.
OK
Lens block faulty.

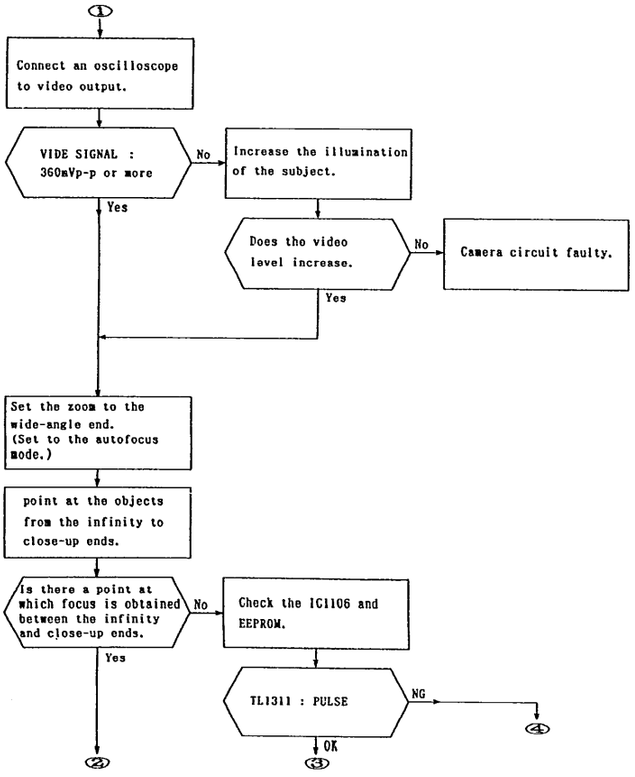

(3) NO ZOOM OPERATION
Does focus operate normally.
No
See "(1) No zoom and focus operation".
Yes
Can zoom be operated from the remote control.
No
Check the zoom switch unit.
Yes
Check the remote control and IR receiver section.
Check the IC1106 and EEPROM.
TL1314 : PULSE
NG
①
OK
TL1301-TL1304 : PULSES
OK
Lens block faulty.
NG
IC1301-2,10,29 : 5V
NG
Check the 5V line.
OK
IC1301-12,20 : 7V
NG
Check the 7V line.
OK
②

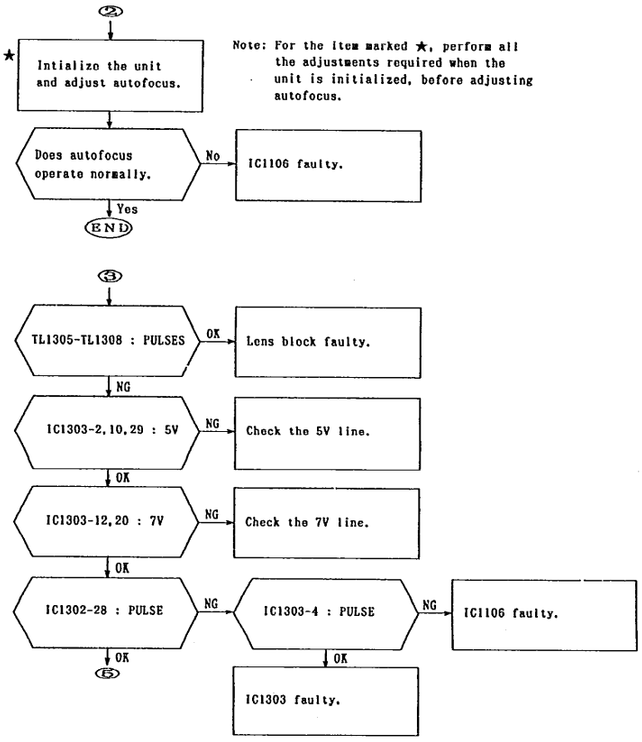

②
OK
IC1301-28 : PULSE
NG
IC1303-15 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1301-3 : PULSE
NG
IC1303-11 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1301-4 : PULSE
NG
IC1303-13 : PULSE
NG
IC1106 faulty.
OK
OK
IC1303 faulty.
IC1301-30 : PULSE
NG
IC1303-17 : PULSE
NG
IC1106 faulty.
OK
OK
IC1301 faulty.
IC1303 faulty.



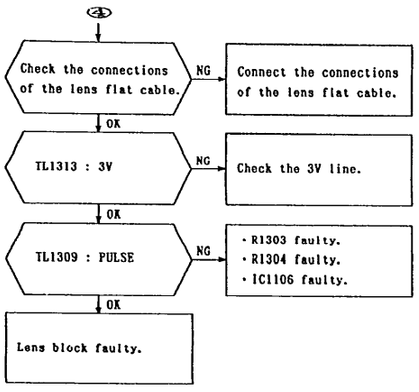


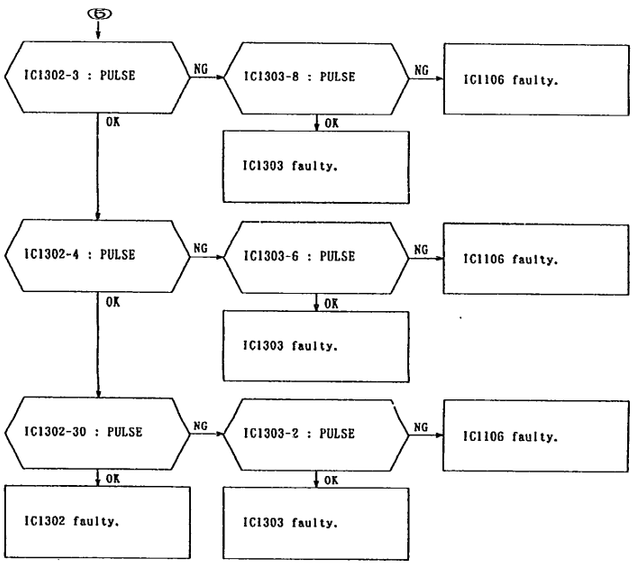
Note: Check the items marked • by pressing the manual focus FAR and NEAR switches alternately.

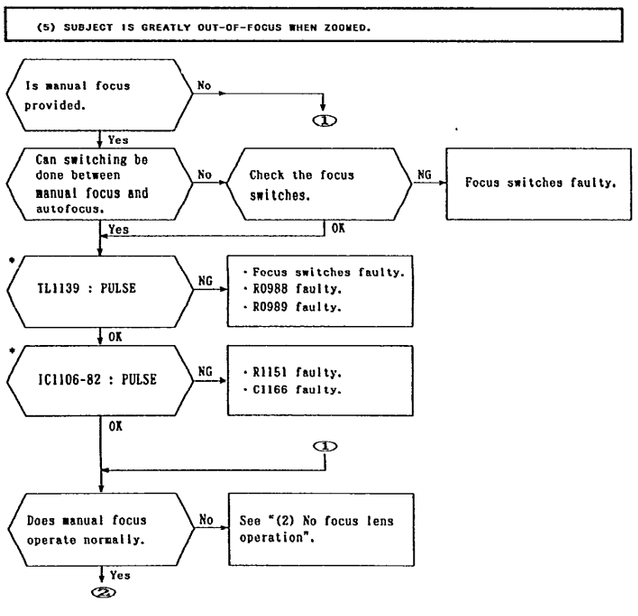




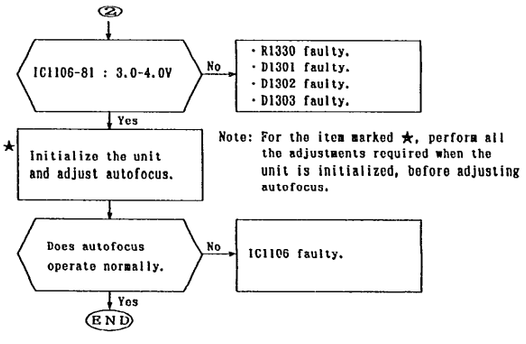
Note: For the item marked ★, perform all the adjustments required when the unit is initialized, before adjusting autofocus.







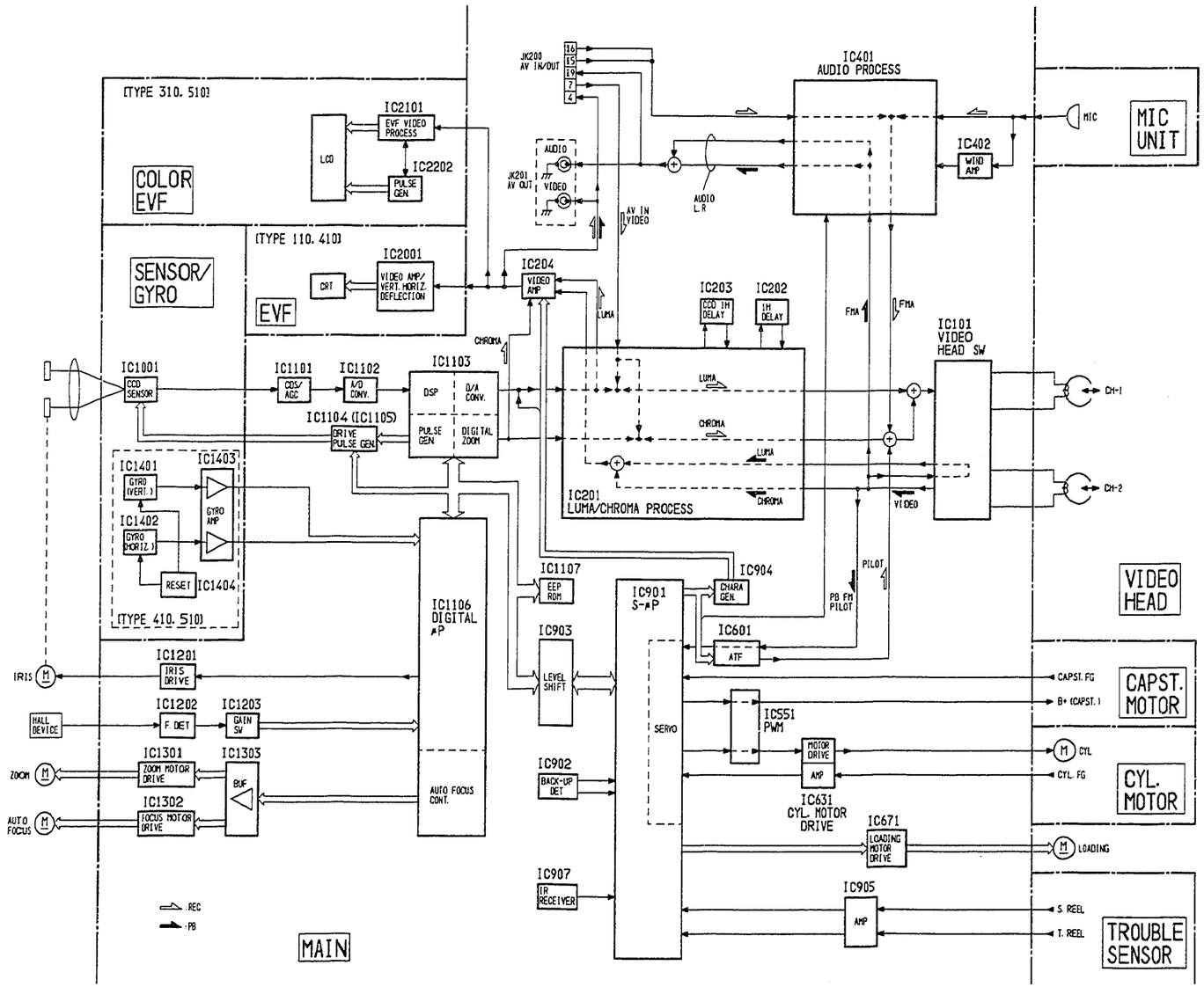
Note: Check the items marked * by pressing the manual focus FAR and NEAR switches alternately.



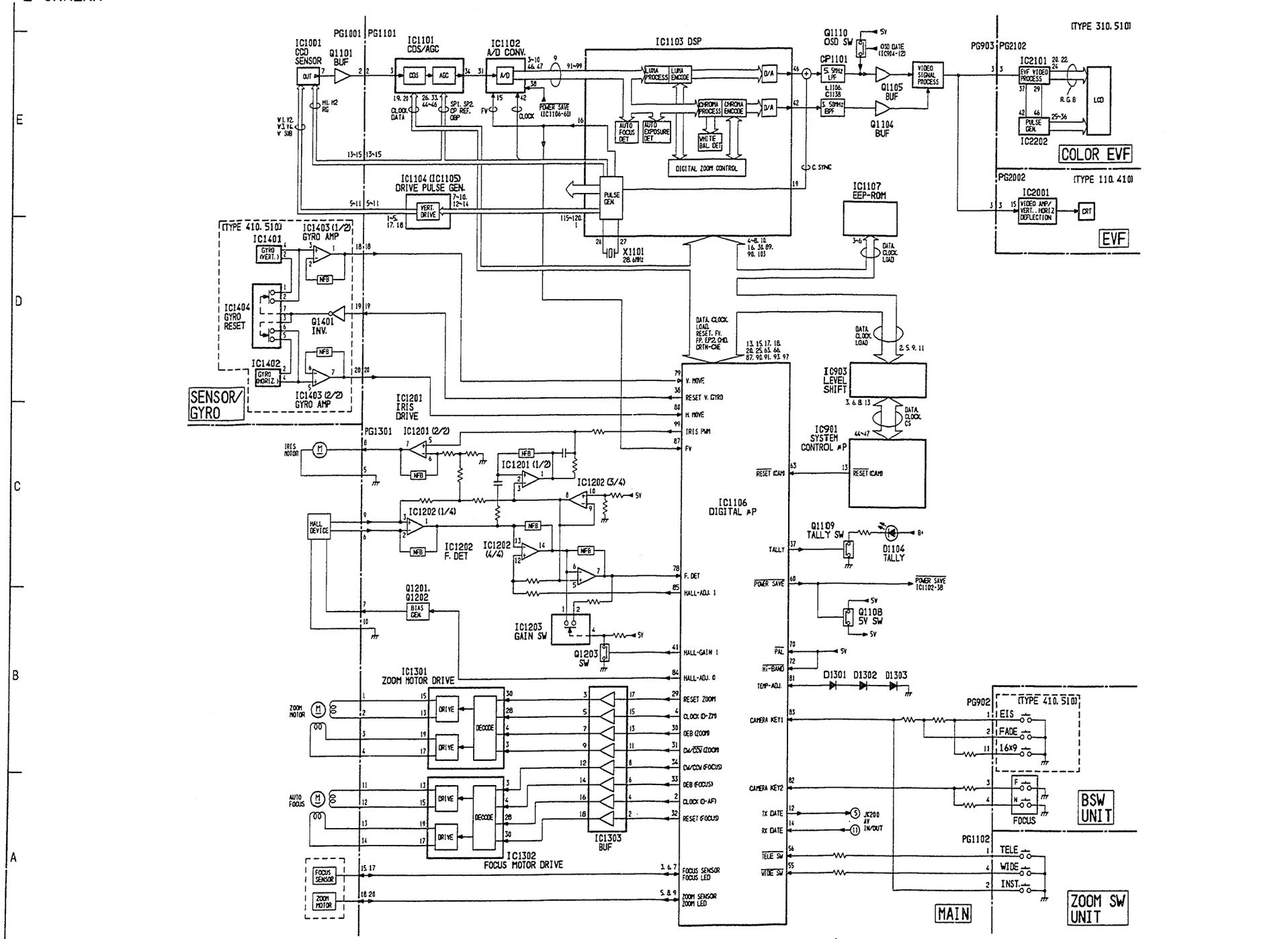
CHAPTER 4

BLOCK DIAGRAMS & MICROPROCESSOR PIN FUNCTION TABLES

1. OVERALL

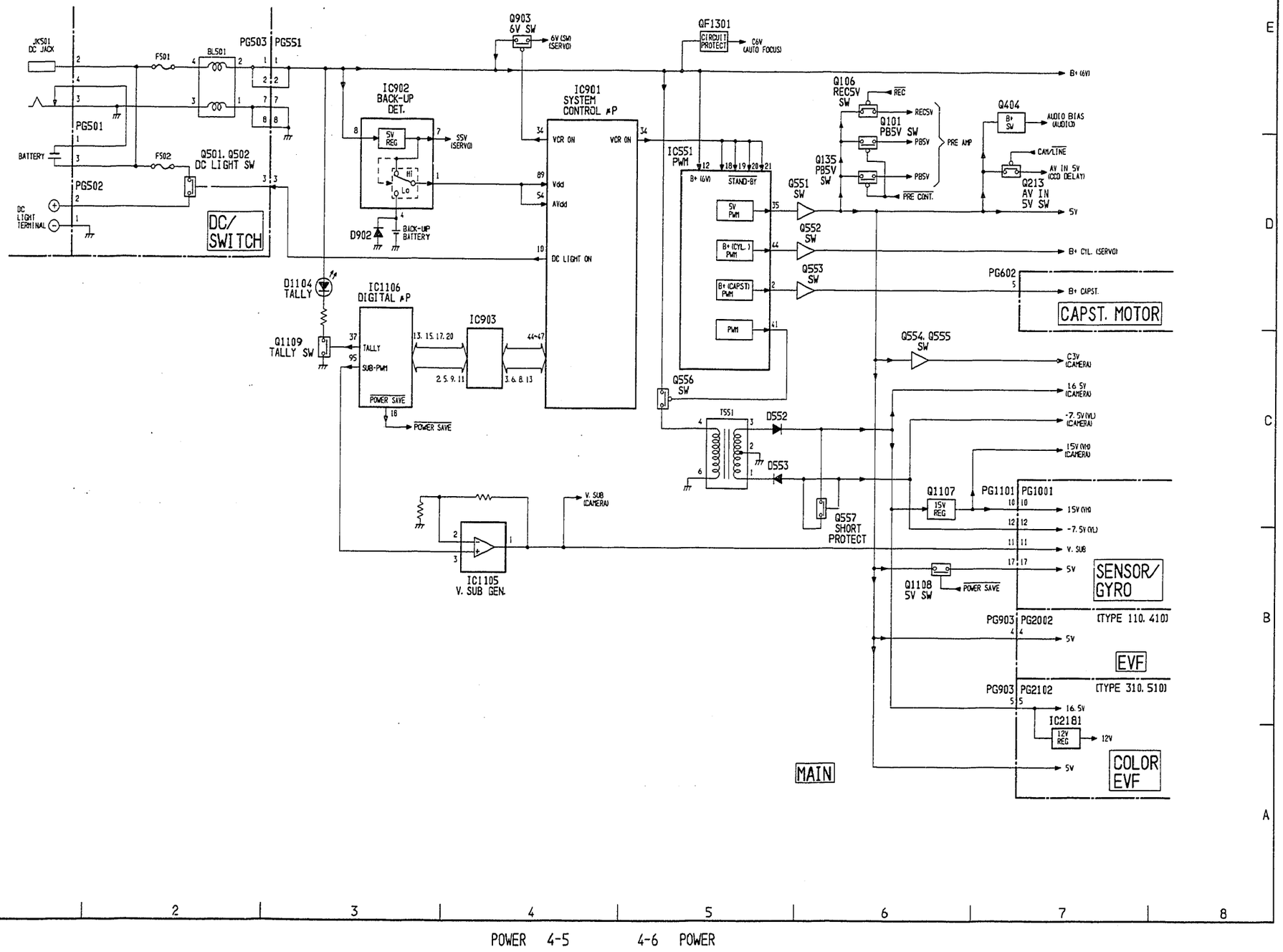

(TYPE 310. 510)
COLOR EVF
SENSOR/ GYRO
(TYPE 110. 410)
EVF
LCD
IC2101
EVF VIDEO PROCESS
IC2202
PULSE GEN
IC2001
VIDEO AMP/ VERT. HORIZ. DEFLECTION
CRT
JK200 AV IN/OUT
JK201 AV OUT
AUDIO
VIDEO
AUDIO L.R
AV IN VIDEO
IC401 AUDIO PROCESS
MIC
MIC UNIT
IC402 WIND AMP
IC204 VIDEO AMP
LUMA
CHROMA
IC203 CCD 1H DELAY
IC202 1H DELAY
FM
IC101 VIDEO HEAD SW
CH-1
CH-2
VIDEO
IC1001 CCD SENSOR
IC1101 CDS/ AGC
IC1102 A/D CONV.
IC1103
DSP
D/A CONV.
PULSE GEN
DIGITAL ZOOM
IC1104 (IC1105)
DRIVE PULSE GEN
IC201 LUMA/CHROMA PROCESS
IC1401 GYRO (VERT.)
IC1402 GYRO (HORIZ.)
IC1403 GYRO AMP
RESET
IC1404
(TYPE 410. 510)
IC1106 DIGITAL AP
AUTO FOCUS CONT.
IC1107 EEP ROM
IC904 CHARA GEN.
PB FM PILOT
PILOT
VIDEO HEAD
IC901 S-AP
SERVO
IC903 LEVEL SHIFT
IC601 ATF
IRIS
IC1201 IRIS DRIVE
HALL DEVICE
IC1202 F. DET
IC1203 GAIN SW
ZOOM
IC1301 ZOOM MOTOR DRIVE
IC1303 BUF
AUTO FOCUS
IC1302 FOCUS MOTOR DRIVE
CAPST. FG
B+ (CAPST.)
CAPST. MOTOR
IC551 PWM
MOTOR DRIVE AMP
CYL
CYL. FG
CYL. MOTOR
IC631 CYL. MOTOR DRIVE
IC902 BACK-UP DET
IC671 LOADING MOTOR DRIVE
LOADING
IC907 IR RECEIVER
IC905 AMP
S. REEL
T. REEL
TROUBLE SENSOR
REC
PB
MAIN

2. CAMERA

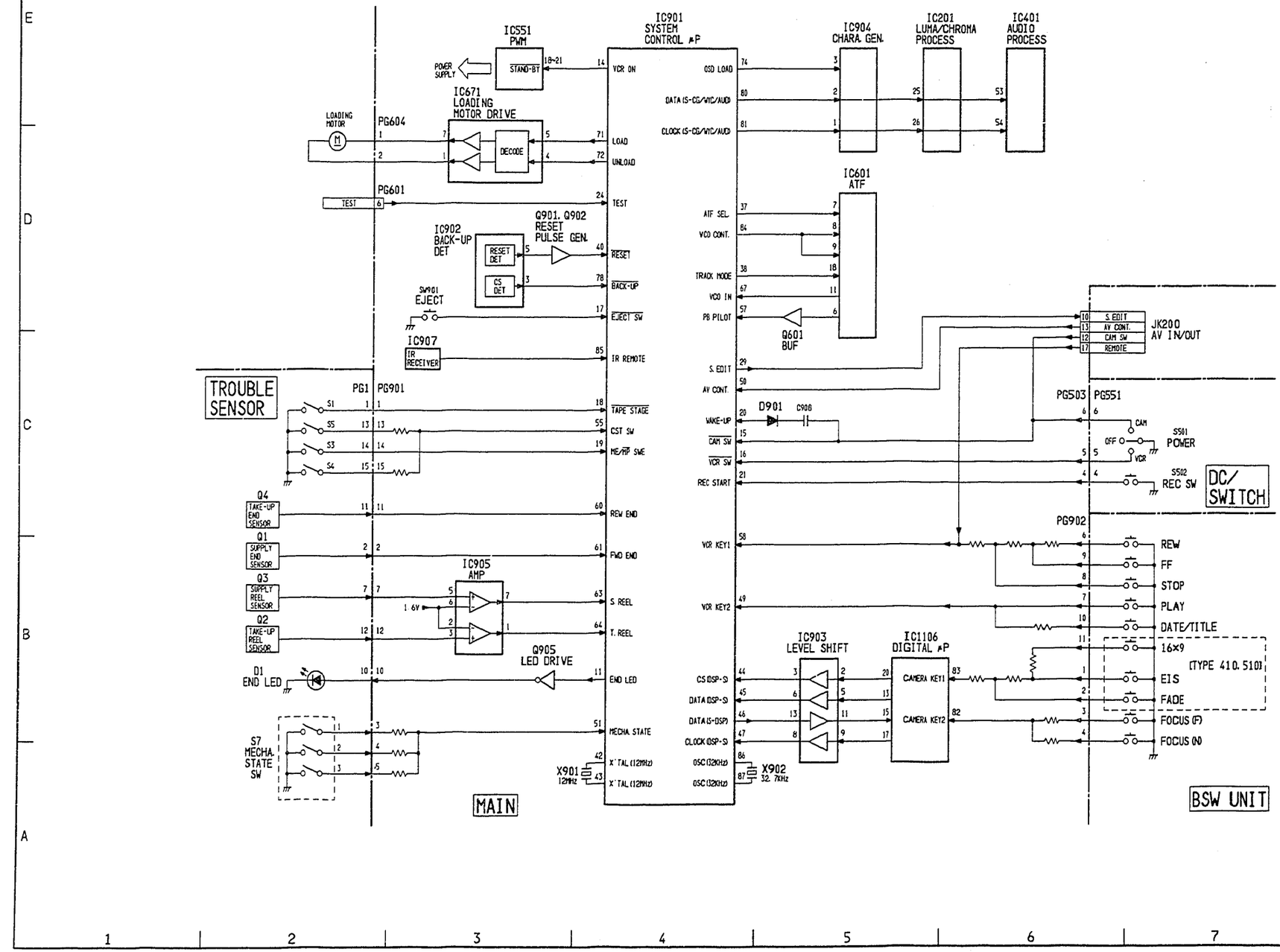


CAMERA 4-3 4-4 CAMERA

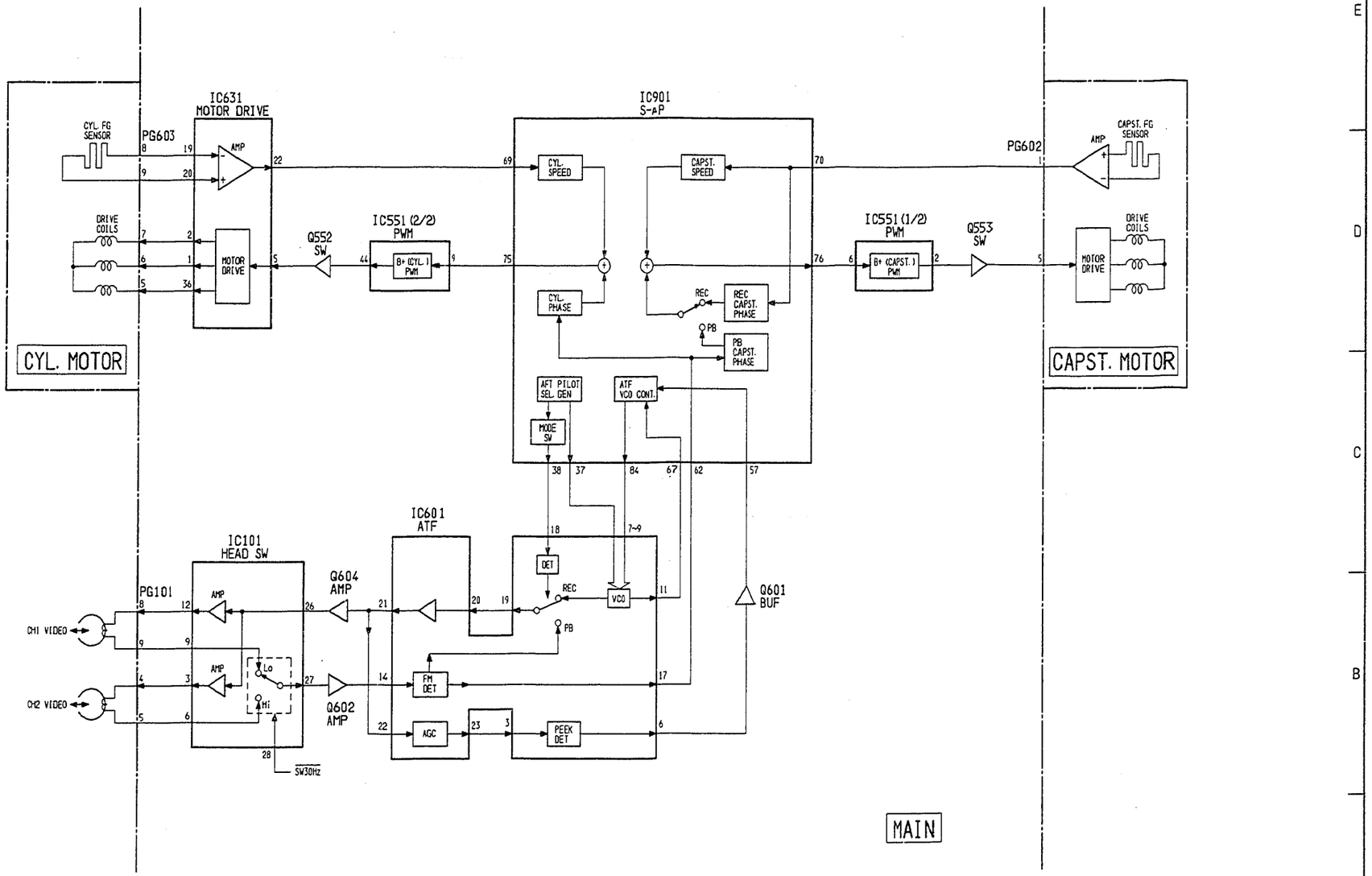
3. POWER


JK501 DC JACK
FS01
BL501
PG503
PG551
PG501
BATTERY
FS02
Q501, Q502 DC LIGHT SW
PG502
DC LIGHT TERMINAL
DC/ SWITCH
Q903 6V SW
6V (SW) (SERVO)
QF1301
CIRCUIT PROTECT
C6V (AUTO FOCUS)
B+ (6V)
IC902 BACK-UP DET.
5V REG
5SV (SERVO)
HI
Lo
D902
BACK-UP BATTERY
IC901 SYSTEM CONTROL AP
VCR ON
Vdd
AVdd
DC LIGHT ON
Q106 REC5V SW
REC
RECSV
Q101 PB5V SW
PB5V
PRE CONT.
PRE AMP
Q135 PB5V SW
Q404
B+ SW
AUDIO BIAS (AUDIO)
CAM/LINE
AV IN 5V (CCD DELAY)
Q213 AV IN 5V SW
5V
IC551 PWM
B+ (6V)
STAND-BY
5V PWM
B+ (CYL.) PWM
B+ (CAPST) PWM
PWM
Q551 SW
Q552 SW
Q553 SW
B+ CYL. (SERVO)
PG602
B+ CAPST.
CAPST. MOTOR
D1104 TALLY
Q1109 TALLY SW
IC1106 DIGITAL AP
TALLY
SUB-PWM
POWER SAVE
IC903
13. 15. 17. 20
2. 5. 9. 11
44~47
3. 6. 8. 13
Q554, Q555 SW
C3V (CAMERA)
16.5V (CAMERA)
-7.5V (VL) (CAMERA)
15V (VH) (CAMERA)
Q556 SW
T551
D552
D553
Q557 SHORT PROTECT
Q1107 15V REG
PG1101
PG1001
15V (VH)
-7.5V (VL)
V. SUB
5V
Q1108 5V SW
SENSOR/ GYRO
(TYPE 110, 410)
PG903
PG2002
EVF
(TYPE 310, 510)
PG2102
16.5V
IC2181 12V REG
12V
COLOR EVF
V. SUB (CAMERA)
IC1105 V. SUB GEN.
MAIN

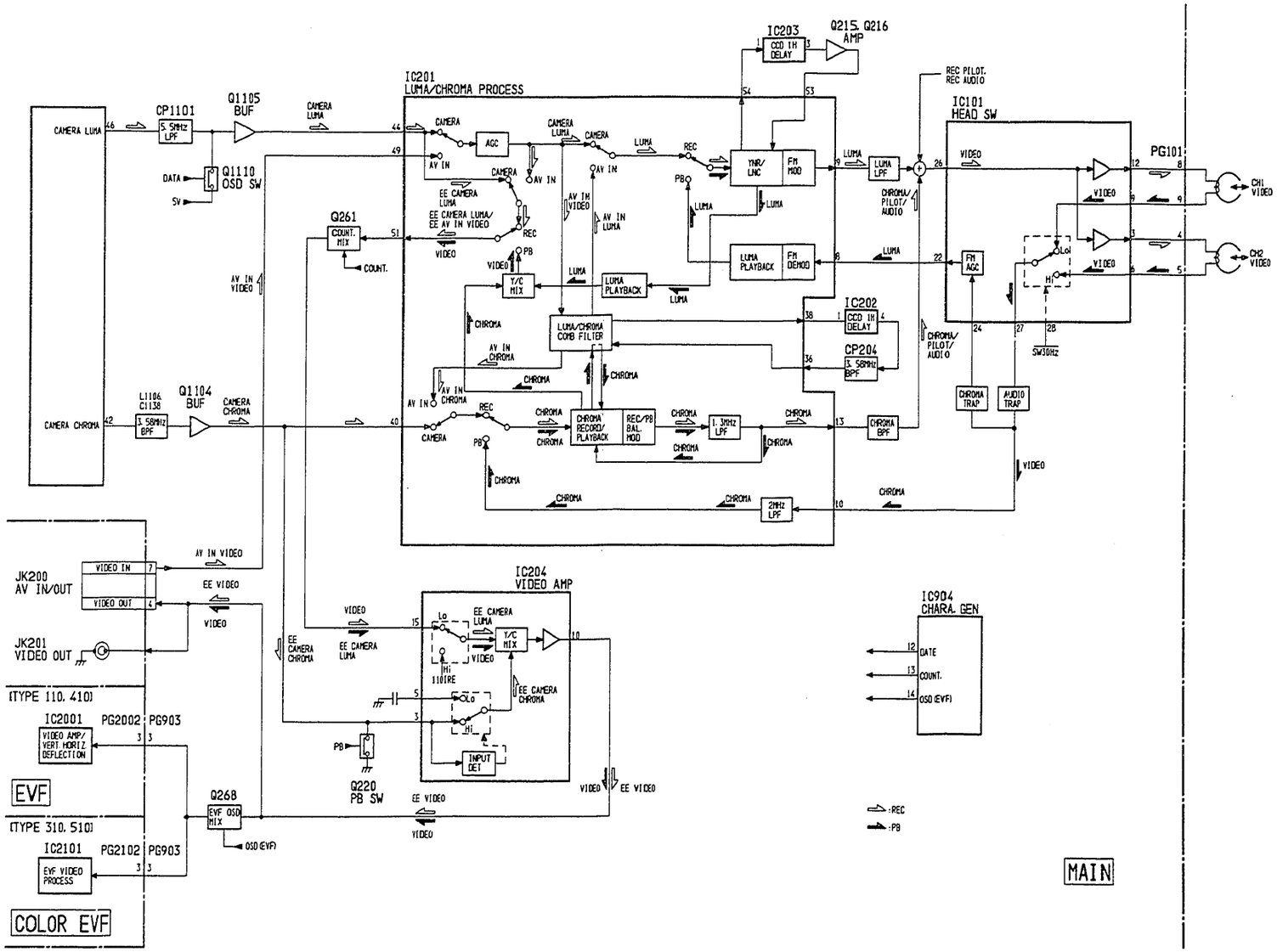
4. SYSTEM CONTROL



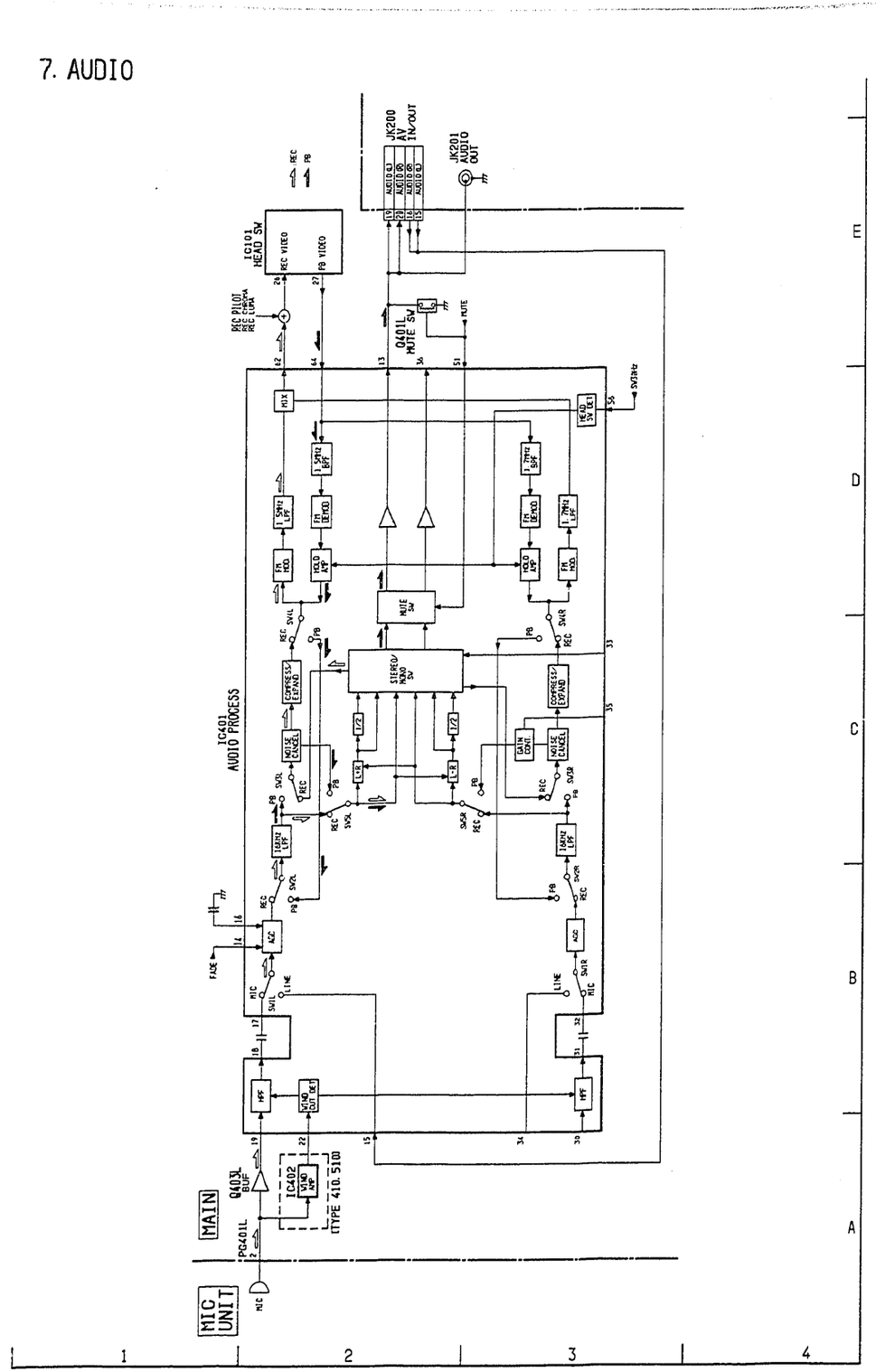
5. SERVO


IC631
MOTOR DRIVE
IC901
S-AP
CYL. FG SENSOR
PG603
AMP
DRIVE COILS
MOTOR DRIVE
Q552 SW
IC551 (2/2) PWM
B+ (CYL.) PWM
CYL. SPEED
CYL. PHASE
CAPST. SPEED
REC
REC CAPST. PHASE
PB
PB CAPST. PHASE
IC551 (1/2) PWM
B+ (CAPST.) PWM
Q553 SW
PG602
CAPST. FG SENSOR
CYL. MOTOR
CAPST. MOTOR
AFT PILOT SEL. GEN
MODE SW
ATF VCO CONT.
IC101
HEAD SW
PG101
CH1 VIDEO
CH2 VIDEO
Lo
Hi
SW30Hz
Q604 AMP
Q602 AMP
IC601
ATF
DET
VCO
FM DET
AGC
PEEK DET
Q601 BUF
MAIN

6. VIDEO


IC201
LUMA/CHROMA PROCESS
IC203
CCD 1H DELAY
Q215, Q216
AMP
IC101
HEAD SW
PG101
CP1101
5.5MHz LPF
Q1105
BUF
CAMERA LUMA
Q1110
OSD SW
DATA
5V
Q261
COUNT. MIX
COUNT.
AV IN VIDEO
EE CAMERA LUMA
EE CAMERA LUMA/ EE AV IN VIDEO
REC
PB
VIDEO
AV IN
CAMERA
AGC
Y/C MIX
LUMA PLAYBACK
YNR/ LNC
FM MOD
FM DEMOD
LUMA LPF
REC PILOT. REC AUDIO
CHROMA/ PILOT/ AUDIO
FM AGC
SW30Hz
CH1 VIDEO
CH2 VIDEO
IC202
CCD 1H DELAY
CP204
3.58MHz BPF
LUMA/CHROMA COMB FILTER
CHROMA TRAP
AUDIO TRAP
L1106 C1138
3.58MHz BPF
Q1104
BUF
CAMERA CHROMA
CHROMA RECORD/ PLAYBACK
REC/PB BAL. MOD
1.3MHz LPF
CHROMA BPF
2MHz LPF
JK200
AV IN/OUT
VIDEO IN
VIDEO OUT
JK201
VIDEO OUT
EE VIDEO
[TYPE 110, 410]
IC2001
VIDEO AMP/ VERT. HORIZ. DEFLECTION
PG2002
PG903
EVF
Q268
EVF OSD MIX
OSD (EVF)
[TYPE 310, 510]
IC2101
EVF VIDEO PROCESS
PG2102
PG903
COLOR EVF
IC204
VIDEO AMP
EE CAMERA CHROMA
Q220
PB SW
INPUT DET
IC904
CHARA. GEN
DATE
COUNT.
OSD (EVF)
:REC
:PB
MAIN

7. AUDIO


JK200
AV IN/OUT
JK201
AUDIO OUT
REC
PB
IC101
HEAD SW
REC VIDEO
PB VIDEO
REC PILOT
REC CHROMA
REC LUMA
Q401L
MUTE SW
MUTE
5VSW
MIX
1.5MHz LPF
FM DEMOD
FM MOD
HOLD AMP
MUTE SW
1.7MHz LPF
STEREO MIX
COMPRESS/ EXPAND
NOISE CANCEL
1/2
L+R
GAIN CONT
1.4MHz LPF
AGC
MIC
LINE
HPF
NOISE CANCEL
IC401
AUDIO PROCESS
Q403L
BUF
IC402
AMP
(TYPE 410.510)
PG401L
MAIN
MIC UNIT
MIC

2. MICROPROCESSOR PIN FUNCTION TABLES

2-1. Digital Microprocessor (IC1106: D-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	—	——	Vcc	3V power input
2	O	(Pulse)	CLOCK(D-AF)	Outputs reference clock pulses to IC1302 (FOCUS MOTOR DRIVE).
3	I	(Pulse)	FOCUS SENSOR	Focus motor position detection input
4	O	(Pulse)	CLOCK(D-AF)	Outputs reference clock pulses to IC1301 (ZOOM MOTOR DRIVE).
5	I	(Pulse)	ZOOM SENSOR	Zoom motor position detection input
6	O	(Pulse)	FOCUS LED1	Output pulses to drive the LEDs in the focus reset switches (FOCUS RESET SW).
7	O	(Pulse)	FOCUS LED2	
8	O	(Pulse)	ZOOM LED1	Output pulses to drive the LEDs in the zoom reset switches (ZOOM RESET SW).
9	O	(Pulse)	ZOOM LED1	
10	—	——	RESET[Lo]	Not used. Open
11	—	——	Vss	Ground
12	O	(Pulse)	RX DATA	Used for initial settings and adjustment. For data communications with personal computer.
14	I	(Pulse)	TX DATA	
13	O	(Pulse)	DATA(D-DSP/ ROM/S)	For data communications with IC1103 (DSP), IC1107 (EEP-ROM) and IC901 (S-μP).
15	I	(Pulse)	DATA(DSP/ROM/ S-D)	
17	O	(Pulse)	CLOCK(D-DSP/ ROM/S)	
16	—	——	——	Not used. Open
18	O	Lo	LOAD[Lo](D-ROM)	Activates data communications with IC1107 (EEP-ROM).
19	—	——	——	Not used. Open
20	O	(Pulse)	LOAD(D-S)	Activates data communications with IC901 (S-μP).
21	—	——	——	Not used. Open
22	—	——	Vss	Ground
23	—	——	——	Not used. Open
24	—	——	——	
25	O	(Pulse)	LOAD(D-DSP)	Activates data communications with IC1103 (DSP).
26	—	——	——	Not used. Open
27	O	(Pulse)	CLOCK(D-CDS)	Transfer data to IC1101 (CDS/AGC).
28	O	(Pulse)	DATA(D-CDS)	
29	O	Hi	RESET ZOOM	Resets IC1301 (ZOOM MOTOR DRIVE) via IC1303 (BUF).
30	O	(Pulse)	OEB(ZOOM)	Activates data communications with IC1301 (ZOOM MOTOR DRIVE) via IC1303 (BUF).

Pin No.	I/O	Active Level	Abbreviation	Function
31	O	Hi/Lo	CW/CCW[Lo] (ZOOM)	Issues a command which determines the direction of motor drive to IC1301 (ZOOM MOTOR DRIVE) via IC1303 (BUF).
32	O	Hi	RESET(FOCUS)	Resets IC1302 (FOCUS MOTOR DRIVE) via IC1303 (BUF).
33	O	(Pulse)	OEB(FOCUS)	Activates data communications with IC1302 (FOCUS MOTOR DRIVE) via IC1303 (BUF).
34	O	Hi/Lo	CW/CCW[Lo] (FOCUS)	Issues a command which determines the direction of motor drive to IC1302 (FOCUS MOTOR DRIVE) via IC1303 (BUF).
35	—	——	Vcc	3V power input
36	—	——	EE CONT.	Not used. Open
37	O	Hi	TALLY	Drives Q1109 (TALLY SW) to turn on the record LED during recording.
38	O	Hi	RESET V.GYRO	Drives IC1404 (GYRO RESET) via Q1401 (INV.) to reset IC1401 (V. GYRO) and IC1402 (H. GYRO).
39	O	Hi	RESET H.GYRO	Not used. Open
40	O	Hi	HALL GAIN 0	Not used. Open
41	O	Hi	HALL GAIN 1	Drives IC1203 (GAIN SW) to control the amplification (gain of Hall device) of IC1202 (F DET).
42	—	——	——	Not used. Open
43	—	——	——	
44	—	——	Vss	Ground
45	—	——	——	Not used. Open
46	—	——	——	
47	—	——	——	
48	—	——	——	
49	—	——	——	
50	—	——	——	
51	—	——	——	
52	—	——	——	
53	—	——	——	
54	I	——	T/W FAST	Not used. Open
55	I	Lo	TELE SW[Lo]	Zoom switch detection inputs
56	I	Lo	WIDE SW[Lo]	
57	—	——	Vss	Ground
58	—	——	——	Not used. Open
59	-	——	——	
60	O	Lo	POWER SAVE[Lo]	Outputs "Lo" in modes other than camera recording to inhibit the operation of each circuit, thus reducing the power consumption.
61	—	——	——	Not used. Open
62	I	Hi	STAND-BY[Lo]	Not used. Connected to 3V power supply.

Pin No.	I/O	Active Level	Abbreviation	Function
63	I	Hi/Lo	RESET	Reset signal input from IC901 (S-μP).
64	I	Hi	MN[Lo]	Not used. Connected to 3V power supply.
65	—	——	Vss	Ground
66	I	(Pulse)	CLOCK	Clock pulse input from IC1103 (DSP).
67	—	——	——	Not used. Open
68	—	——	Vcc	3V power input
69	—	——	——	Not used. Open
70	I	Hi	PAL[Lo]	Not used. Connected to 3V power supply.
71	I	Hi	SECAM[Lo]	Not used. Connected to 3V power supply.
72	I	Hi	Hi-BAND	Not used. Connected to 3V power supply.
73	I	Lo	M00	Not used. Ground
74	I	Hi	M01	Not used. Connected to 3V power supply.
75	I	Hi	M02	
76	—	——	AVcc	5V power input (for analog circuits in microprocessor)
77	—	——	V.REF	A/D reference voltage input (connected to 5V power supply).
78	I	0V-5V	F.DET	F-value detection input. Receives the F.DET voltage detected by IC1202 (F.DET) and compares this with the reference voltage input via pin 77 to detect the F-value.
79	I	0V-5V	V.MOVE	Receives vertical camera shake correction data from IC1401 (GYRO (VERT.)) via IC1403 (GYRO AMP).
80	I	0V-5V	H.MOVE	Receives horizontal camera shake correction data from IC1402 (GYRO (HORIZ.)) via IC1403 (GYRO AMP).
81	I	0V-5V	TEMP-ADJ.	Temperature change detection input. Detects variations in the forward voltage at the connected diode to correct the back-focus.
82	I	0V-5V	CAM KEY2	Camera switch detection input (Manual focus)
83	I	0V-5V	CAM KEY1	Camera switch detection input (Camera shake correction, fade, cinema mode, instant zoom).
84	O	0V-5V	HALL-ADJ.0	Drives Q1201 and Q1202 (HALL BIAS) to control the bias voltage of the Hall devices.
85	O	0V-5V	HALL-ADJ.1	Controls the offset voltage of IC1202 (F. DET).
86	—	——	AVss	Ground
87	I	(Pulse)	FV	Receives the vertical sync pulses that detect the iris detection area, from IC1103 (DSP).
90	I	(Pulse)	FP	Field discrimination pulse input
91	I	(Pulse)	EP2	Receives pulses which discriminate the iris detection area.
93	I	(Pulse)	CHD	Horizontal sync input
88	I	——	NEAR-SW	Not used. Open
89	I	——	FAR-SW	Not used. Open

Pin No.	I/O	Active Level	Abbreviation	Function
92	—	——	Vss	Ground
94	—	——	——	Not used. Open
95	O	(Pulse)	DUB-PWM	Controls IC1105 (V.SUB GEN).
96	—	——	——	Not used. Open
97	O	(Pulse)	CRTN-CNE	Supplies pulses to IC1103 (DSP) to control the wipe fade operation.
98	—	——	——	Not used. Open
99	O	(Pulse)	IRIS PWM	Iris motor drive output
100	—	——	——	Not used. Open

2-2. System Control Microprocessor (IC901: S-μP)

Pin No.	I/O	Active Level	Abbreviation	Function
1	O	(Pulse)	AUD SW30Hz	Outputs switching pulses to IC401 (AUDIO PROCESS).
2	—	——	SAMPLE	Not used. Open
3	O	Lo	CH2 REC[Lo]	Output the signals to select the video heads for recording. Go "Lo" in the corresponding channel period during recording.
4	O	Lo	CH1 REC[Lo]	
5	O	(Pulse)	SW15Hz	Not used. Open
6	O	(Pulse)	SW30	Head switching pulse output
7	—	——	OPTION ON	Not used. Opened through a resistor (R714: 10kΩ).
8	O	Lo	PB[Lo]	Output to control the mode of the video processor. Goes "Lo" during playback.
9	O	Hi	PB	Output to control the mode of the video processor. Goes "Hi" during playback.
10	O	Hi	DC LIGHT ON	Outputs "Hi" with power on to turn on Q501 and Q502 (DC LIGHT SW), thus supplying power to the DC camera light terminals.
11	O	(Pulse)	END LED	End LED drive output. Outputs pulses of approx. 50Hz when power is turned on.
12	O	Hi	CYL. ST-BY	Cylinder motor start auxiliary output. Outputs "Hi" for 50 ms when the motor is started in the forward rotation direction.
13	O	Lo	RESET[Lo](CAM)	Camera block power supply control output. Outputs "Hi" when power is turned on and "Lo" when power is turned off to initialize the camera block (IC1106: D-μP).
14	O	Hi	VCR ON	Power control output. Outputs "Hi" when power is turned on.
15	I	Lo	CAM SW[Lo]	Power switch detection input. "Lo" is input during recording (camera mode).

Pin No.	I/O	Active Level	Abbreviation	Function
16	I	Lo	VCR SW[Lo]	Power switch detection input. "Lo" is input during playback (VCR mode).
17	I	Lo	EJECT SW[Lo]	Eject switch detection input. When "Lo" is input, the camcorder performs the eject operation even when the power is turned off (standby release input).
18	I	Lo	TAPE STAGE[Lo]	Cassette holder open/close detection input. "Lo" is input when the cassette holder is closed.
19	I	Hi/Lo	ME/Mp[Lo] SW	Input to discriminate the type of tape. Hi: ME (metal evaporated) tape, Lo: MP (metal powder) tape
20	I	Lo	WAKE UP[Lo]	Standby release input. When the camera power is turned on, "Lo" is input to release the standby mode. IC901 detects the inputs of each switch to start operation.
21	I	Lo	REC START[Lo]	Recording start/stop switch detection input
22	—	——	——	Not used. Connected to 5V power supply via a resistor (R911: 47kΩ).
23	I	Hi	Hi BAND	Playback mode detection input. IC901 receives the playback mode detection signal sensed by IC2101 (VIDEO PROCESS) and instructs IC904 (CHARA. GEN.) to generate the display signals and also transfers the operation mode data to IC201. Open for models with which only normal tapes are used.
24	I	Hi	TEST PROG.	Test program start detection input. A test program is executed when "Hi" is input.
25	I	Hi/Lo	ST/MONO[Lo]	Stereo/monaural select input (Hi: stereo, Lo: monaural)
26	I	Hi/Lo	BW-EVF/ C-EVF[Lo]	Black-and-white/color EVF select input (Hi: black-and-white EVF, Lo: color EVF)
27	0	Hi	MUTE	Audio muting output. Outputs "Hi" to mute sound.
28	0	Hi/Lo	CAM/LINE[Lo]	Video processor mode control output. Outputs "Hi" during camera recording and "Lo" with an external (line) signal.
29	0	Hi/Lo	SYNCHRO EDIT	Table-top VCR mode control output. The operation mode of the VCR connected to JK200 (AV IN/OUT) is controlled remotely using the pause switch. "Hi" output sets the VCR to the pause mode and "Lo" output releases the pause mode (record mode).
30	0	Hi	TRICK PLAY	Controls the video processor operation mode. Outputs "Hi" during trick play.
31	0	Hi	OSD RESET	Outputs "Lo" with power on and is set to open with power off to initialize IC904 (CHARA. GEN.).
32	—	——	——	Not used. Open
33	0	Hi	CAPST.ON	Capstan motor power control output
34	0	Lo	VCR ON[Lo]	Power control output. Outputs "Lo" when power is turned off.

Pin No.	I/O	Active Level	Abbreviation	Function
35	—	——	f2 SEL	Not used. Open
36	—	——	f3 SEL	
37	0	Hi/Lo	ATF SEL	Auto track finding (ATF) pilot signal select output.
38	0	Hi/Lo	TRACK. MODE	Output to select the pilot signal from IC601 (ATF). Hi: VCO output, Lo: Playback (PB) FM signal
39	—	——	GND	Ground
40	I	Lo	RESET[Lo]	Microprocessor reset input. "Lo" input resets the microprocessor.
41	—	——	Vss	Ground
42	0	(Pulse)	X' TAL	Drive X901 to generate 12MHz main clock pulses.
43	I	(Pulse)	X' TAL	
44	I	(Pulse)	LOAD(D-S)	For data communications with IC1106 (D-μP).
45	I	(Pulse)	DATA(D-S)	
46	0	(Pulse)	DATA(S-D)	
47	I	(Pulse)	CLOCK(D-S)	
48	I	Hi/Lo	NTSC/PAL[Lo]	Internal mode select input (NTSC: 4V or more, PAL: 0.8V or less)
49	I	0V-5V	VCR KEY2	VCR operation switch detection input (playback, date/title).
50	I	Lo	AV CONT.[Lo]	Input to detect whether an external AV signal is input or not. "Lo" is input when an AV input cable is connected to the AV input/output connector (JK200: AV IN/OUT).
51	I	0V-5V	MECHA. STATE	Mechanism state switch detection input
52	—	——	AVss	Ground
53	I	——	V.REF	Reference voltage input
54	—	——	AVdd	5V power input
55	I	0V-5V	CST SW[Lo]	Hi-8 MP tape/erase prevention tab detection input
56	I	0V-5V	BATT./SHORT.	Input to detect the battery remaining level and short-circuits in the power circuit.
57	I	(Pulse)	PB PLT	Playback pilot signal (PB PILOT) input
58	I	0V-5V	VCR KEY1	VCR operation switch detection input (rewind, fast forward, stop)
59	I	0V-5V	TRACK ADJ.	For the connection of a tracking control for adjustment. When an ATF-R jig is connected to PG601 (test plug), the variable resistor on the ATF-R jig can be used as a tracking control.
60	I	(Pulse)	REW END	Take-up and supply tape end detection inputs
61	I	(Pulse)	FWD END	
62	I	(Pulse)	PB ENV.	Playback (PB) FM signal input
63	I	(Pulse)	S.REEL	Supply/take-up reel sensor inputs. Used to calculate the remaining tape and to detect reel lock.
64	I	(Pulse)	R.REEL	
65	I	Hi/Lo	HB/Lb[Lo]	Internal mode select input (Hi: Hi-8 models, Lo: models used exclusively with normal tapes)

Pin No.	I/O	Active Level	Abbreviation	Function
66	I	(Pulse)	C.SYNC	Composite sync signal input. The separated vertical sync signal is divided by two to generate the 1/2V.SYNC pulse which is used to control the cylinder speed during recording (reference signal).
67	I	(Pulse)	VCO	Receive the signal from the VCO in IC601 (ATF) to fix the frequency of the recording pilot signal (VCO's output).
84	O	(Pulse)	VCO CONT.	
68	I	(Pulse)	TACH PULSE	Tach pulse input. Feedback signal that controls the recording phase of the cylinder.
69	I	(Pulse)	CYL FG	Cylinder FG (CYL. FG) pulse input. Controls the cylinder speed during recording and playback.
70	I	(Pulse)	CAPST. FG	Capstan FG (CAPST.FG) pulse input. Used for counting of the linear time counter and recording restart control (assemble recording).
71	O	Hi	LOAD	Loading motor drive outputs
72	O	Hi	UNLOAD	
73	O	Hi	LM SLOW	Not used. Open
74	O	(Pulse)	OSD LOAD	Activates communications with IC904 (CHARA. GEN.).
75	O	PWM	CYL.SPEED	Cylinder/capstan servo control outputs
76	O	PWM	CAPST.SPEED	
77	I	(Pulse)	CAPST.FG	Capstan FG (CAPST.FG) pulse input. Used for counting of the linear time counter and recording restart control (assemble recording).
78	I	Lo	BACK UP[Lo]	Inputs whether a battery is attached or not. "Lo" is input when the battery is detached, to shift the microprocessor to the backup mode in which the data is saved.
79	—	——	TACH SEL	Not used. Open
80	O	(Pulse)	DATA(S-CG/WYC/AUD)	For data communications with IC904 (CHARA. GEN.), IC201 (LUMA/CHROMA PROCESS) and IC401 (AUDIO PROCESS).
81	O	(Pulse)	CLOCK(S-CG/WYC/AUD)	
82	O	Hi	FADE	Rapid audio fading output. Outputs "Hi" when fading is started to fade the audio signal in rapidly, synchronized with the video signal.
83	I	Lo	Hi-8 REC[Lo]	Internal mode select input (Hi: Hi-8 models, Lo: models used exclusively with normal tapes)
85	I	(Pulse)	IR REMOTE	Remote operation signal input from the infrared receiver.
86	I	(Pulse)	OSC(32kHz)	Generate 32kHz sub-clock pulses.
87	O	(Pulse)	OSC(32kHz)	
88	—	——	Vss	Ground
89	—	——	Vdd	5V power input
90	—	——	——	Not used. Connected to 5V power supply.
91	O	Hi	CYL.REVERSE	Cylinder motor reversing control output

Pin No.	I/O	Active Level	Abbreviation	Function
92	O	Lo	CAPST.REVERSE [Lo]	Capstan motor reversing control output
93	O	Lo	REC[Lo]	Output to control the video processor during recording.
94	—	——	——	Not used. Open
95	O	Hi	FE CONT.	Flying erase head oscillation control output
96	O	Lo	PRE CONT[Lo]	Preamp activation signal. Outputs "Hi" during playback to activate the preamp.
97	O	(Pulse)	H.DRIVE	Artificial H. sync signal output
98	O	(Pulse)	ADDV+SQ	Artificial V. sync signal + video muting signal output
99	O	(Pulse)	SW30Hz[Lo]	Inverted head switching pulse output
100	O	Hi	REC MUTE	Not used. Open

CHAPTER 5

SCHEMATIC & CIRCUIT BOARD DIAGRAMS

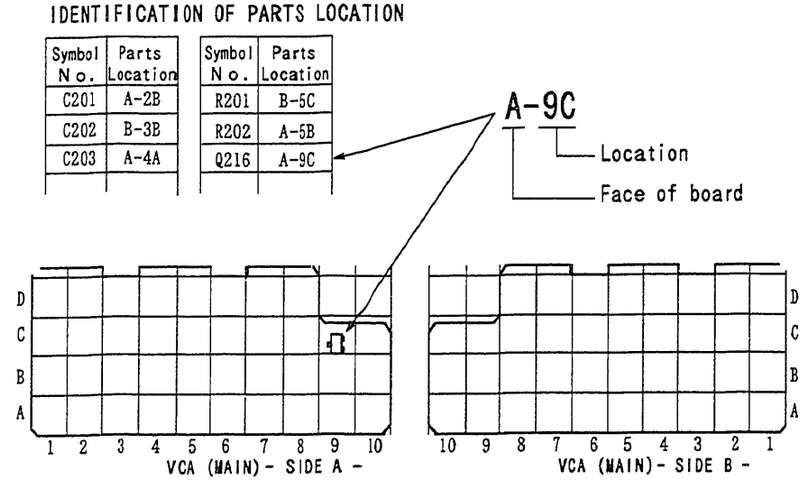
[Parts Location Indexing Tables]

This service manual shows the parts location indexing tables beside the major circuit board diagrams. These tables indicate the locations of each part on the circuit boards. Use the tables to locate the parts on the circuit boards.

IDENTIFICATION OF PARTS LOCATION

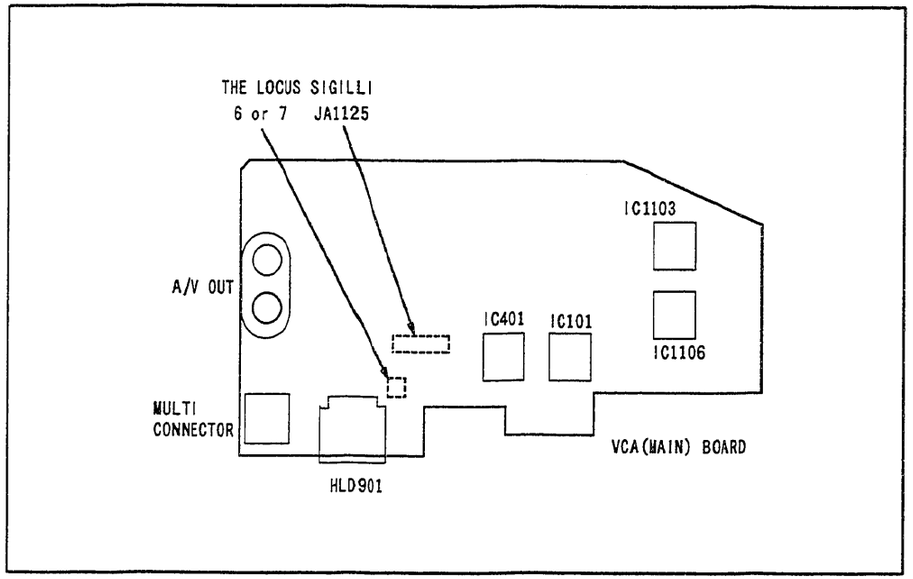
Symbol No.	Parts Location
C201	A-2B
C202	B-3B
C203	A-4A

Symbol No.	Parts Location
R201	B-5C
R202	A-5B
Q216	A-9C

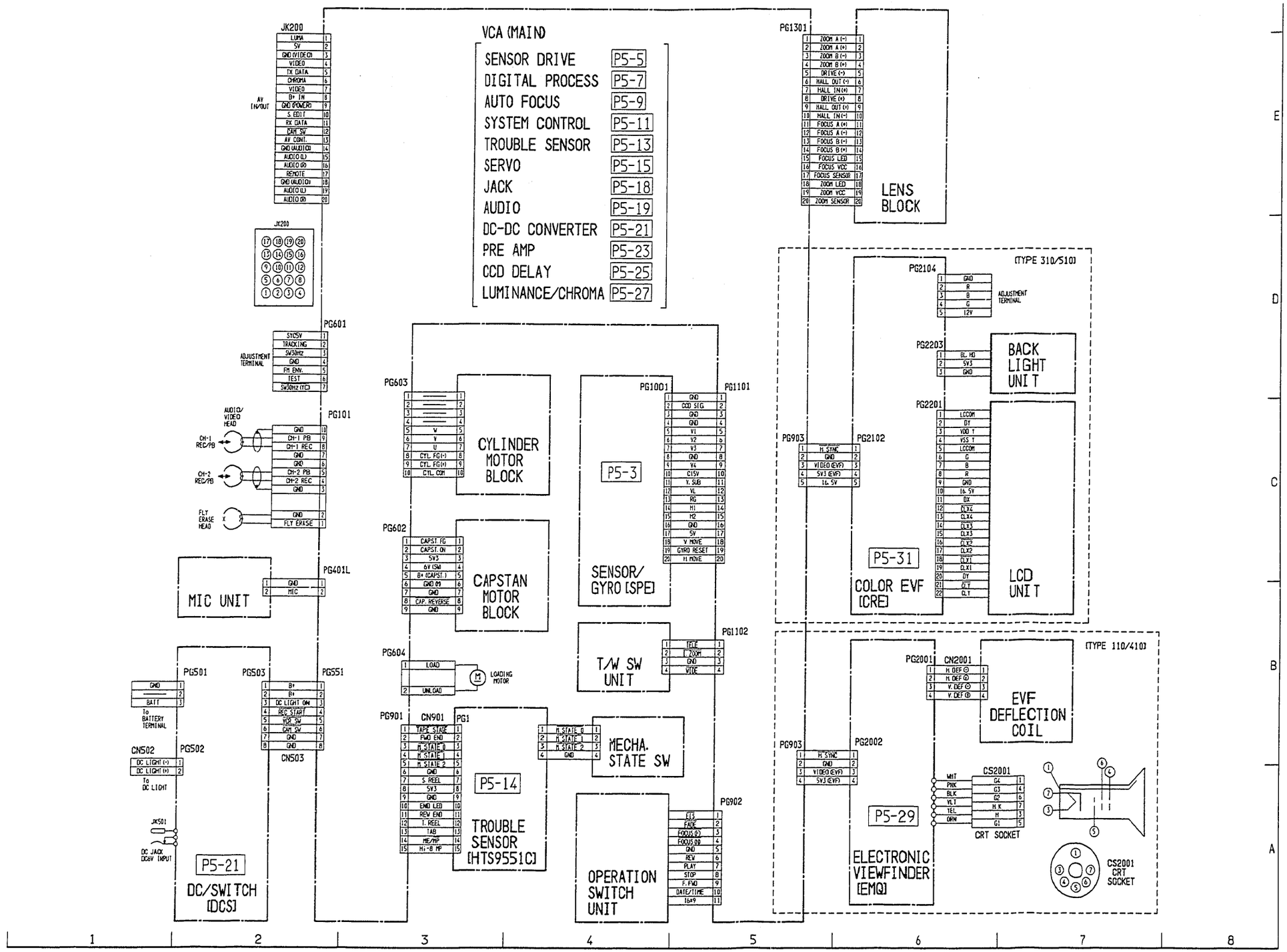


HOW TO DISCRIMINATE THE NEW AND OLD BOARDS

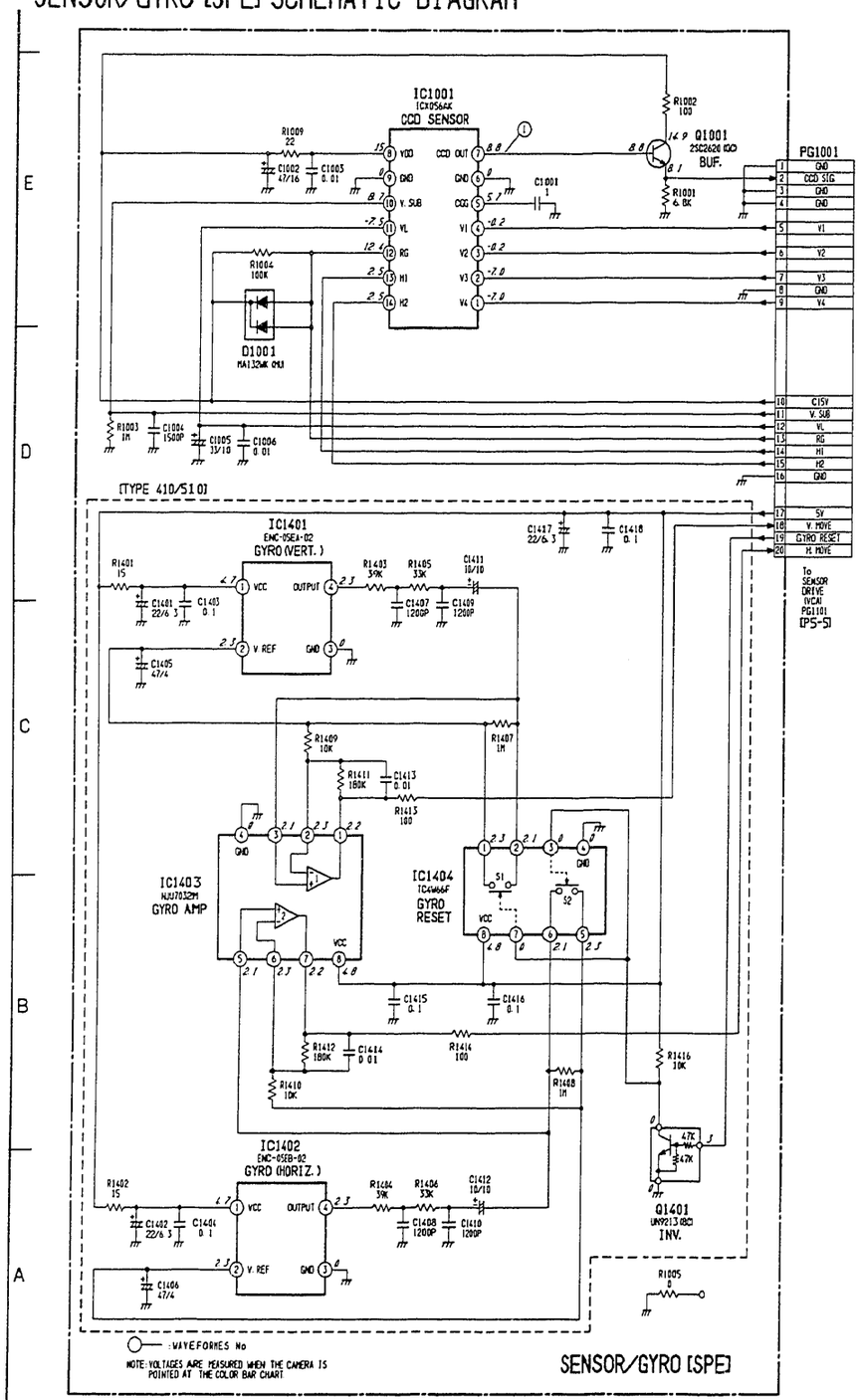
The circuit boards can be discriminated from the pattern numbers as well as the serial numbers.



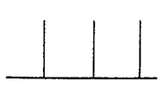
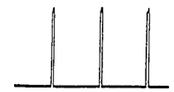
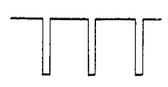
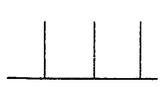
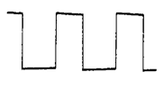
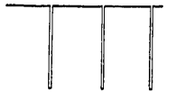
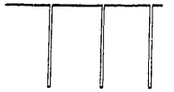
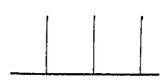
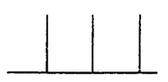
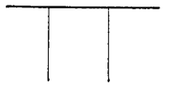
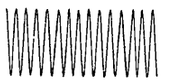
INTERNAL WIRING DIAGRAM



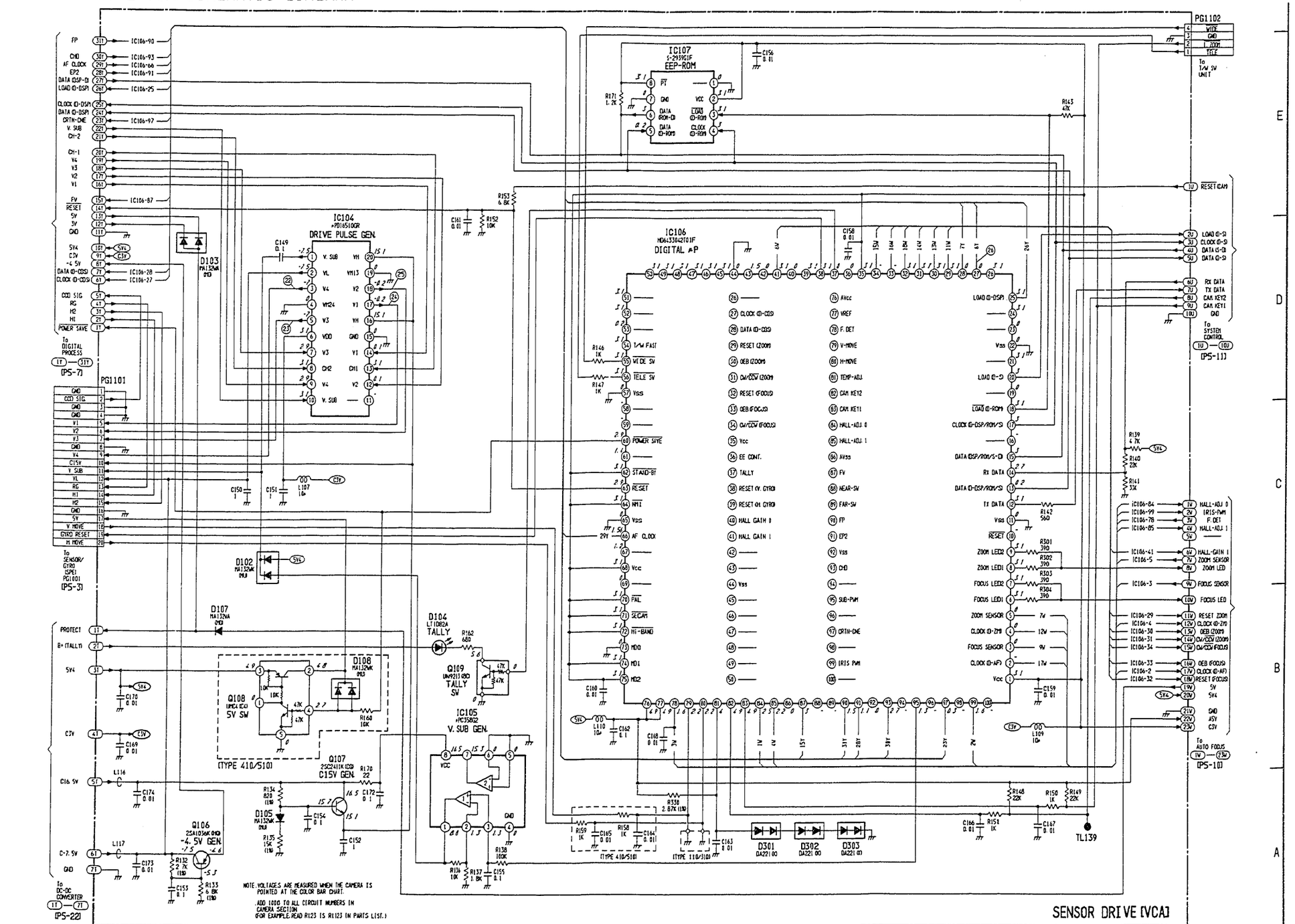
SENSOR/GYRO [SPE] SCHEMATIC DIAGRAM



CAMERA SECTION WAVEFORMS

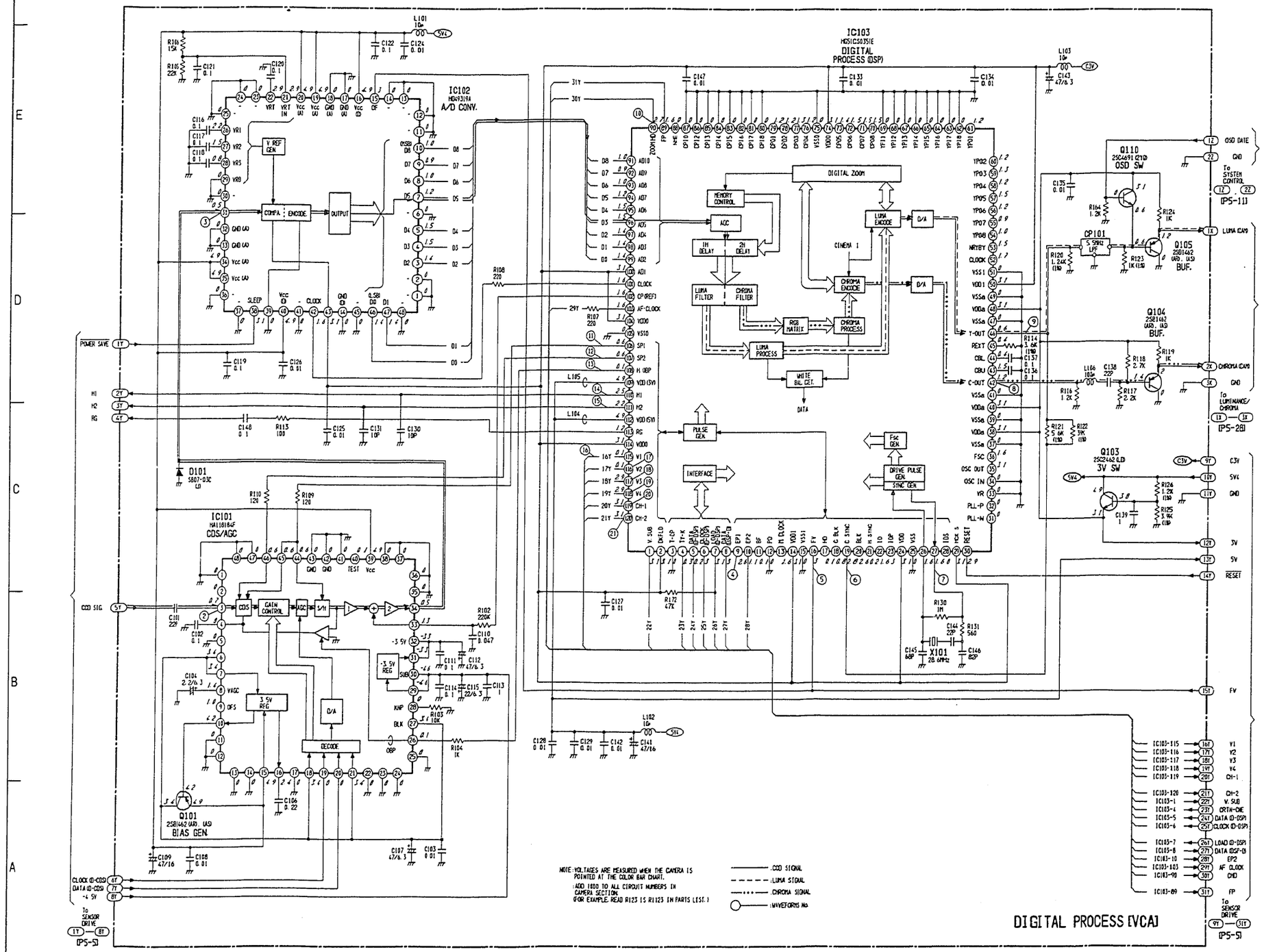
1-A IC1001-7 700mVp-p 0.2V/20.0 μ sec. cm COLOR CHART	8-A IC1103-42 730mVp-p 0.2V/20.0 μ sec. cm COLOR CHART	15-A IC1103-111 6.0Vp-p 2V/100nsec. cm COLOR CHART	22-A IC1104-3 8.0Vp-p 2V/20.0 μ sec. cm COLOR CHART
2-A IC1101-3 400mVp-p 0.2V/20.0 μ sec. cm COLOR CHART	9-A IC1103-46 1.0Vp-p 0.2V/20.0 μ sec. cm COLOR CHART	16-A IC1103-115 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	23-A IC1104-5 7.0Vp-p 2V/20.0 μ sec. cm COLOR CHART
			
3-A IC1102-31 1.6Vp-p 0.5V/20.0 μ sec. cm COLOR CHART	10-A IC1103-90 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	17-A IC1103-116 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	24-A IC1104-17 7.0Vp-p 2V/20.0 μ sec. cm COLOR CHART
			
4-A IC1103-9 3.5Vp-p 1V/20.0 μ sec. cm COLOR CHART	11-A IC1103-106 3.5Vp-p 1V/50.0nsec. cm COLOR CHART	18-A IC1103-117 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	25-A IC1104-18 8.0Vp-p 2V/20.0 μ sec. cm COLOR CHART
			
5-A IC1103-16 3.4Vp-p 1V/5.0msec. cm COLOR CHART	12-A IC1103-107 3.5Vp-p 1V/50.0nsec. cm COLOR CHART	19-A IC1103-118 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	26-A IC1106-27 3.4Vp-p 1V/5.0msec. cm COLOR CHART
			
6-A IC1103-19 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	13-A IC1103-108 3.4Vp-p 1V/20.0 μ sec. cm COLOR CHART	20-A IC1103-119 3.4Vp-p 1V/5.0msec. cm COLOR CHART	
			
7-A IC1103-27 1.8Vp-p 0.5V/20.0nsec. cm COLOR CHART	14-A IC1103-110 6.0Vp-p 2V/100nsec. cm COLOR CHART	21-A IC1103-120 3.4Vp-p 1V/5.0msec. cm COLOR CHART	
			

SENSOR DRIVE [VCA] SCHEMATIC DIAGRAM

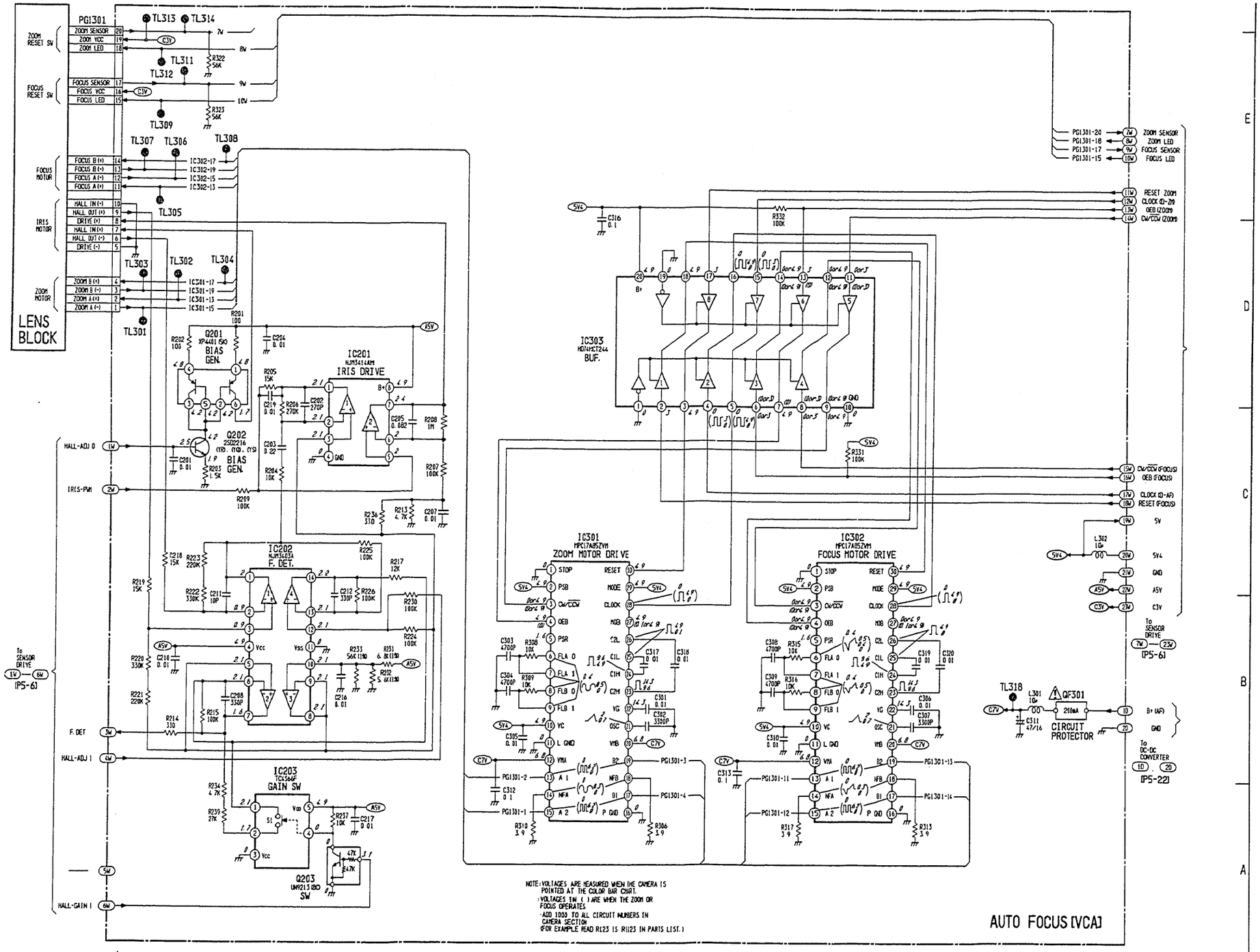


SENSOR DRIVE 5-5 5-6 SENSOR DRIVE

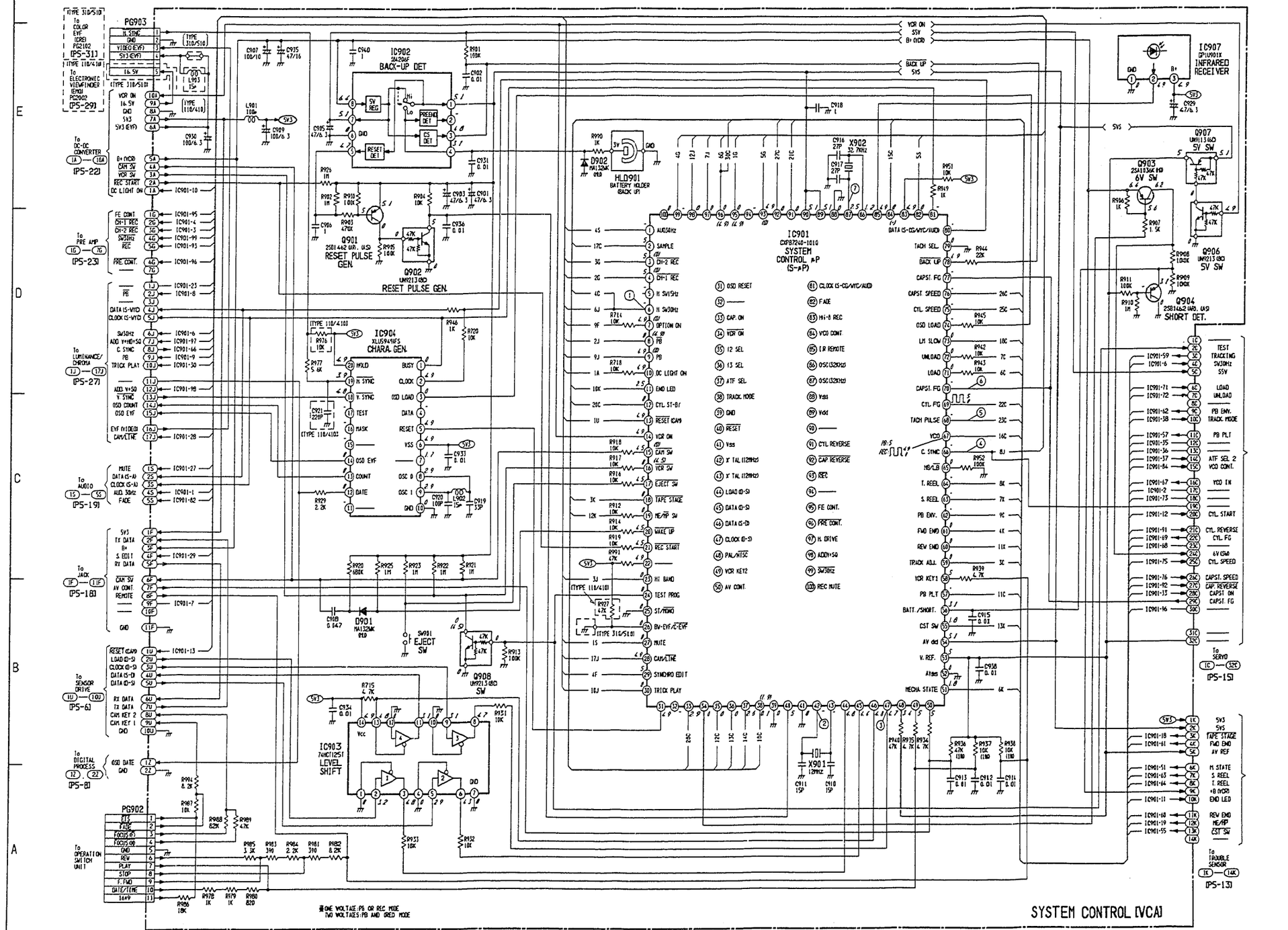
DIGITAL PROCESS [VCA] SCHEMATIC DIAGRAM



AUTO FOCUS [VCA] SCHEMATIC DIAGRAM

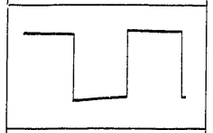


SYSTEM CONTROL [VCA] SCHEMATIC DIAGRAM

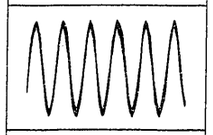


SYSTEM CONTROL SECTION WAVEFORMS

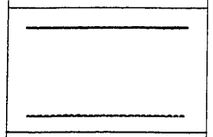
1-A IC901-6 5.2Vp-p
1V/5.0msec. cm
REC/PLAY



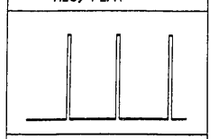
2-A IC901-42 4.4Vp-p
1V/50.0nsec. cm
REC/PLAY



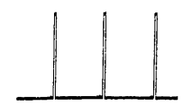
3-A IC901-47 5.0Vp-p
1V/20.0 μ sec. cm
REC/PLAY



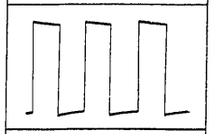
4-A IC901-66 5.0Vp-p
1V/20.0 μ sec. cm
REC/PLAY



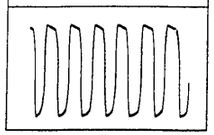
5-A IC901-68 5.0Vp-p
1V/10.0msec. cm
REC/PLAY



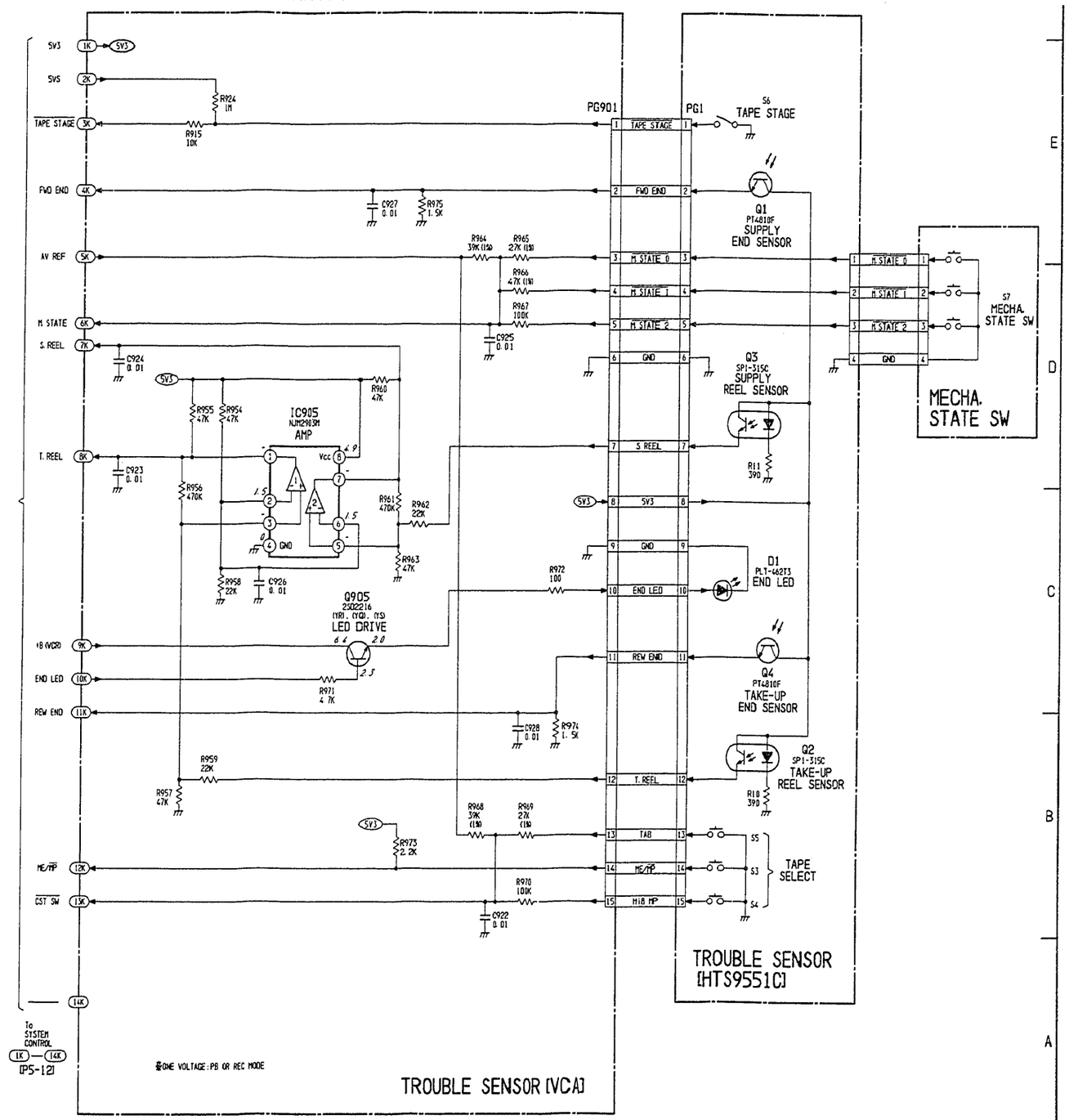
6-A IC901-70 5.0Vp-p
1V/200 μ sec. cm
REC/PLAY



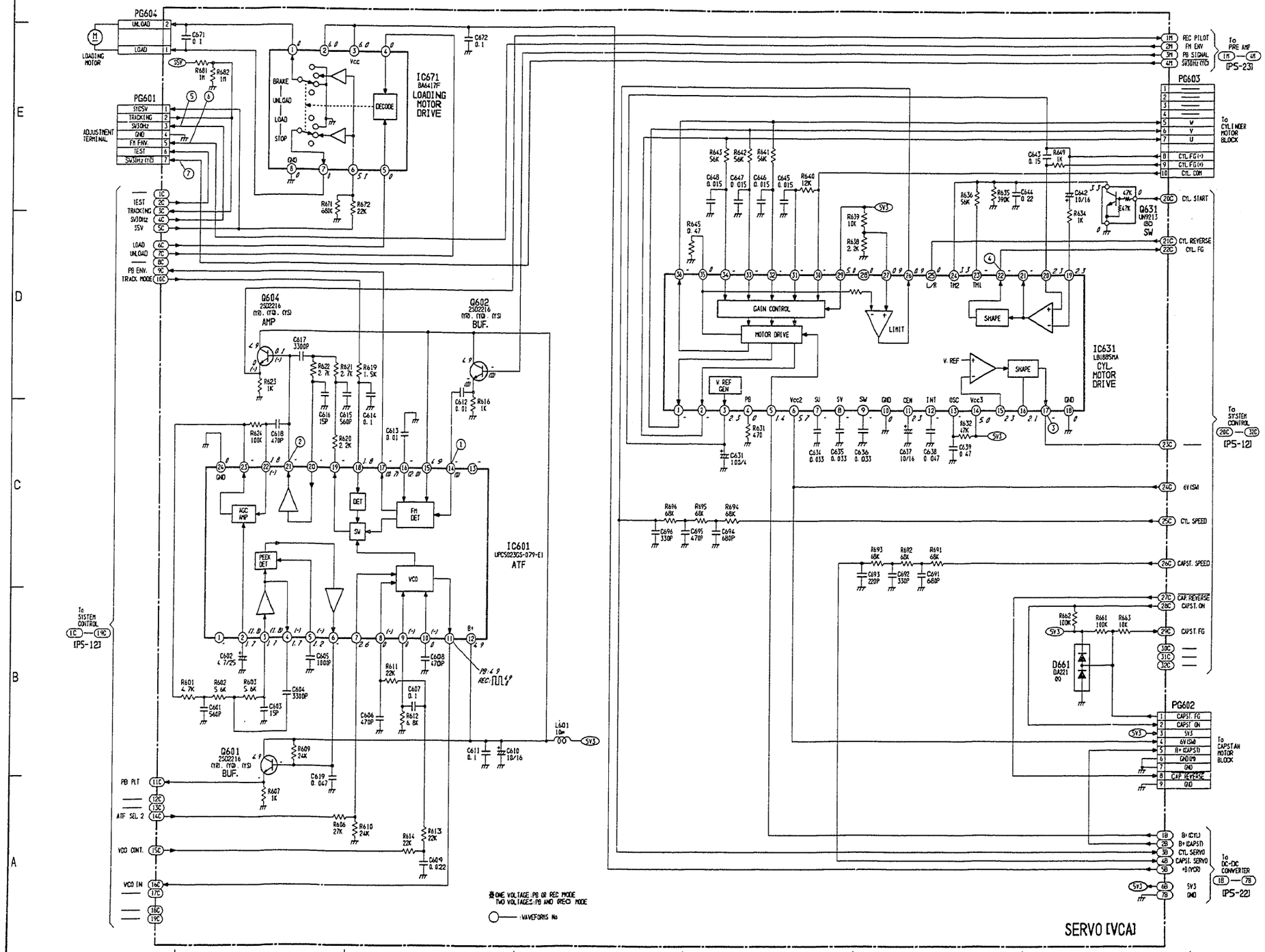
7-A IC901-87 5.3Vp-p
1V/20.0 μ sec. cm
REC/PLAY



TROUBLE SENSOR [VCA] SCHEMATIC DIAGRAM

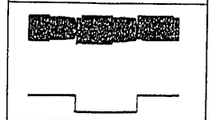


SERVO [VCA] SCHEMATIC DIAGRAM

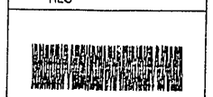


SERVO SECTION WAVEFORMS

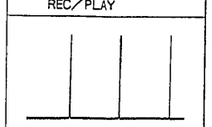
1-B IC601-14 250mVp-p
0.2V/5.0msec. cm
PLAY



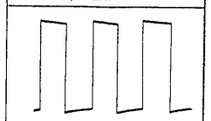
2-A IC601-21 880mVp-p
200mV/20.0 μ sec. cm
REC



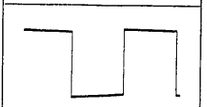
3-A IC631-17 5.0Vp-p
1V/10.0msec. cm
REC/PLAY



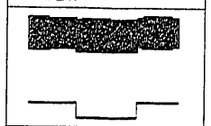
4-A IC631-22 5.2Vp-p
1V/1.0msec. cm
REC/PLAY



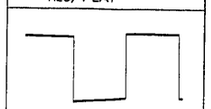
5-A PG601-3 5.3Vp-p
1V/5.0msec. cm
REC/PLAY



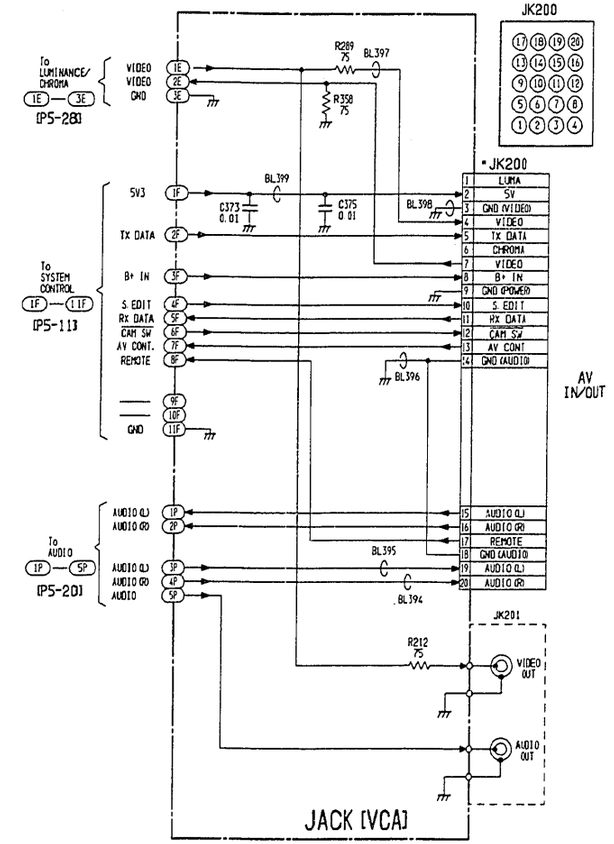
6-B PG601-5 250mVp-p
0.2V/5.0msec. cm
PLAY



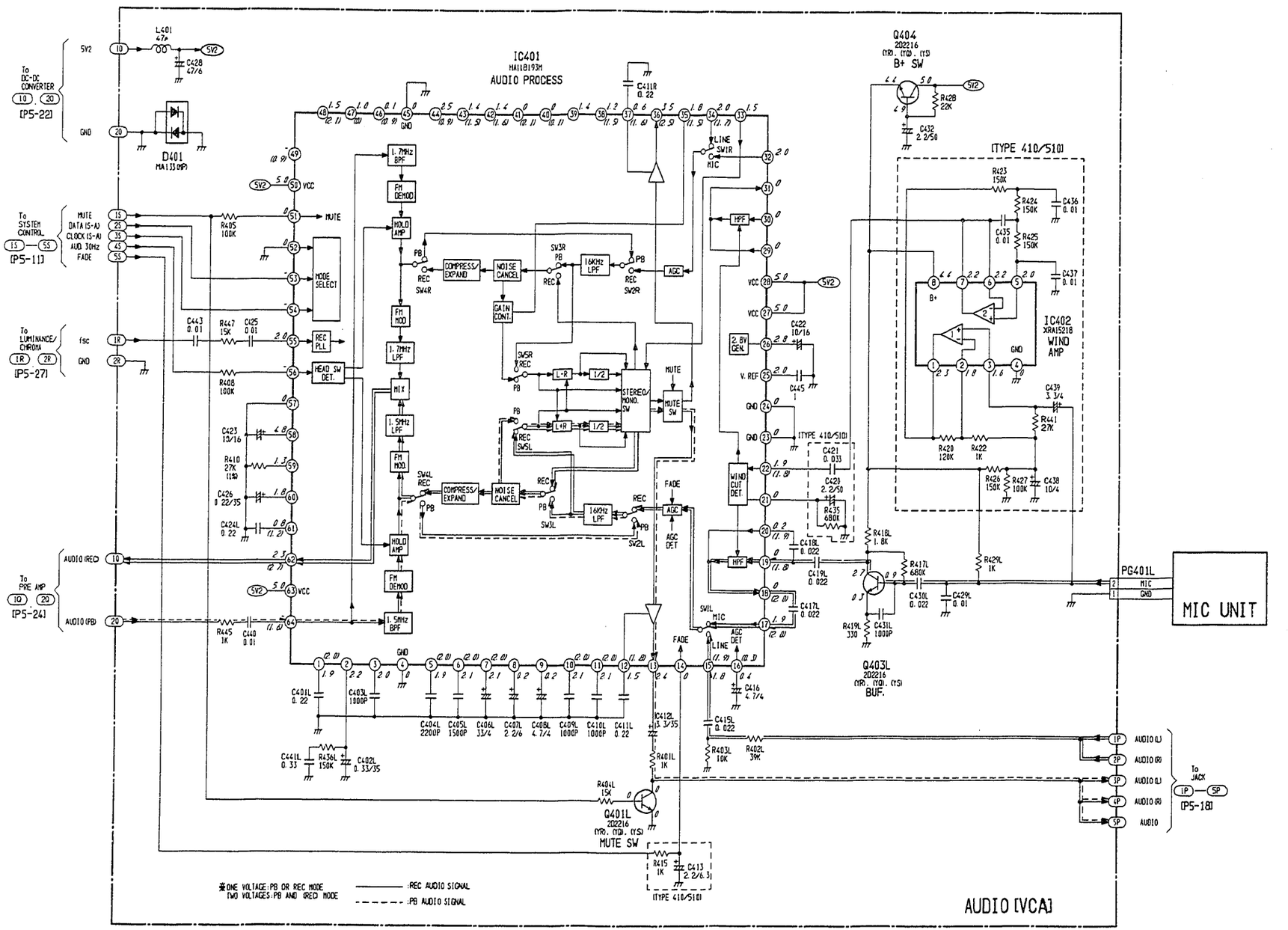
7-A PG601-7 3.8Vp-p
1V/5.0msec. cm
REC/PLAY



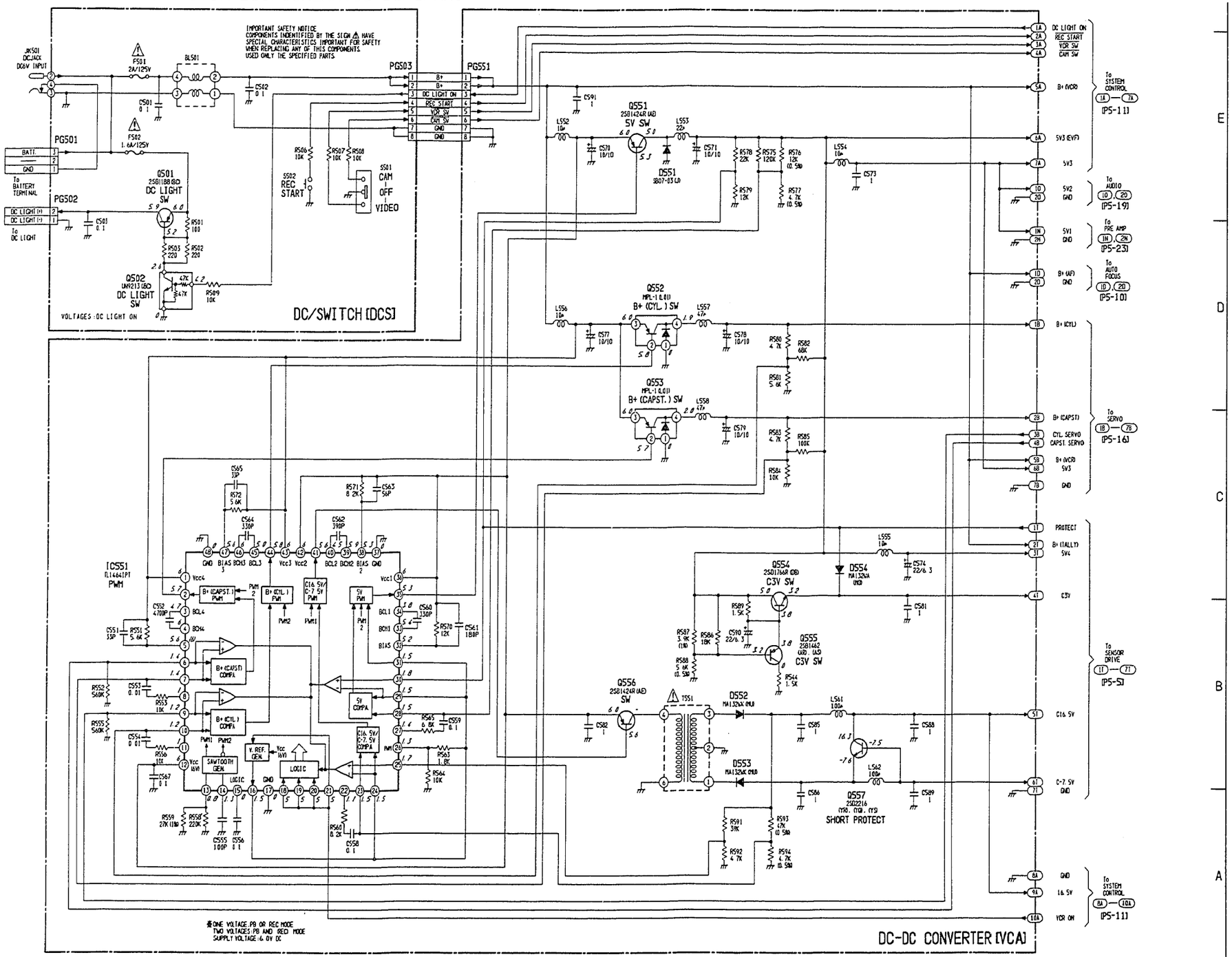
JACK [VCA] SCHEMATIC DIAGRAM



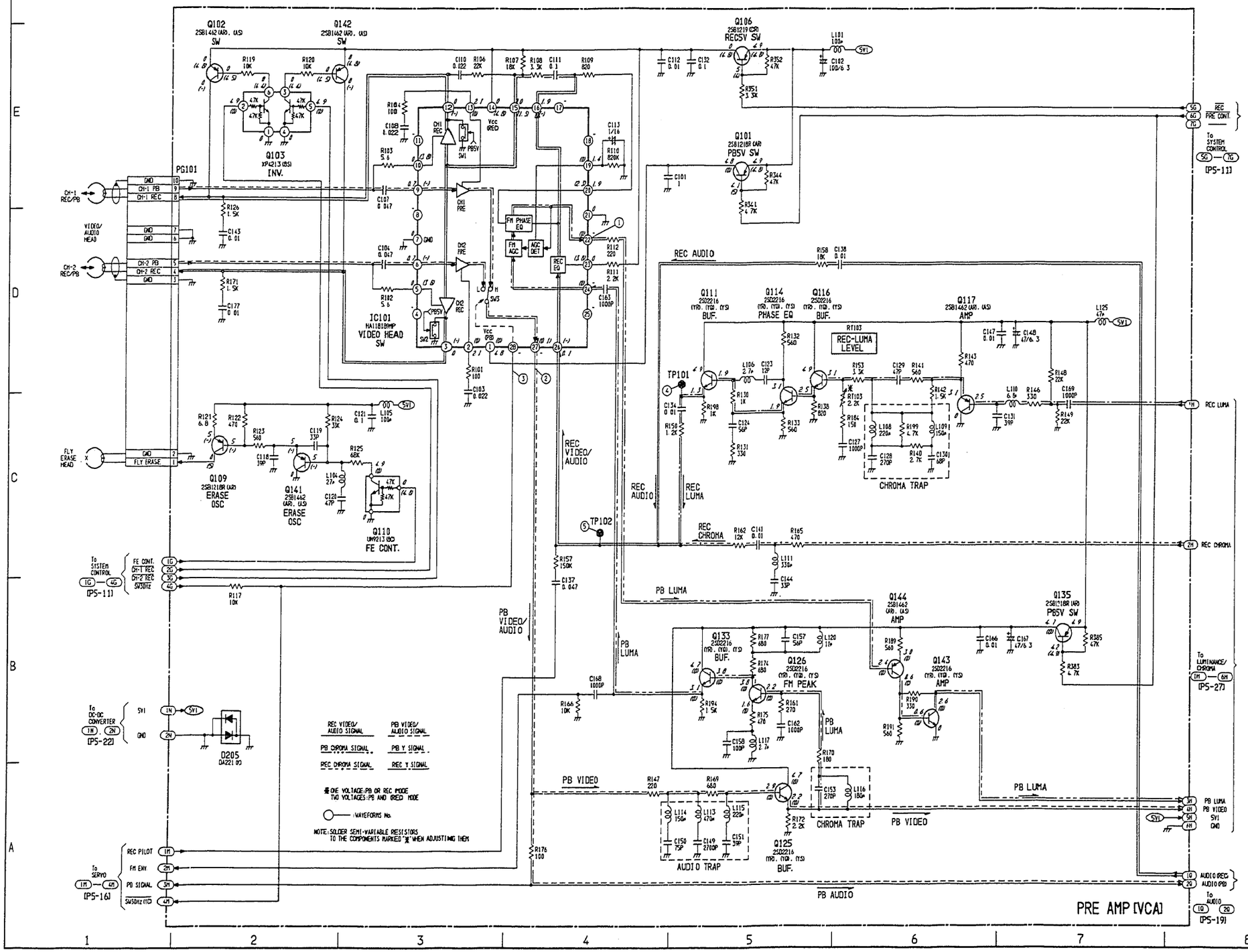
AUDIO [VCA] SCHEMATIC DIAGRAM



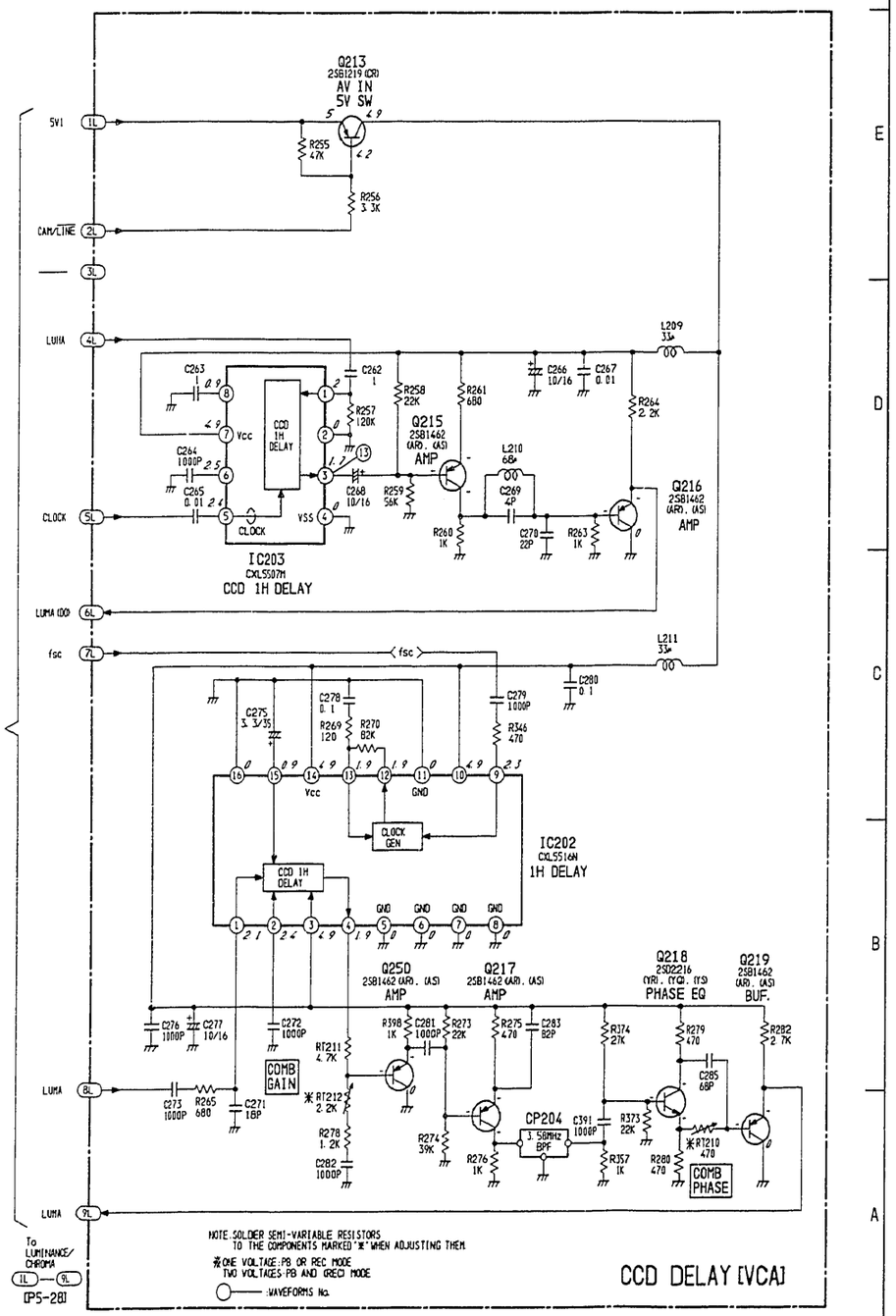
DC-DC CONVERTER [VCA], DC/SWITCH [DCS] SCHEMATIC DIAGRAMS


IMPORTANT SAFETY NOTICE
COMPONENTS INDENTIFIED BY THE SIGN ⚠ HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY WHEN REPLACING ANY OF THIS COMPONENTS. USED ONLY THE SPECIFIED PARTS
DC/SWITCH [DCS]
DC-DC CONVERTER [VCA]
IC551 IL1464IPT PWM
Q501 2SD1888 (BD) DC LIGHT SW
Q502 UN9213 (BD) DC LIGHT SW
Q551 2SB1424R (AD) 5V SW
Q552 MPL-1 (L,D) B+ (CYL.) SW
Q553 MPL-1 (L,D) B+ (CAPST.) SW
Q554 2SD1764R (DB) C3V SW
Q555 2SB1442 (AD, LD) C3V SW
Q556 2SB1424R (AD) SW
Q557 2SD2216 (Y,G, O,Y,G) SHORT PROTECT
D551 SB07-03 (J)
D552 MA132WK (MB)
D553 MA132WK (MB)
D554 MA132WA (MD)
SHORT PROTECT
VOLTAGES : DC LIGHT ON
*ONE VOLTAGE : PB OR REC MODE
TWO VOLTAGES : PB AND REC MODE
SUPPLY VOLTAGE : 6.0V DC

PRE AMP [VCA] SCHEMATIC DIAGRAM



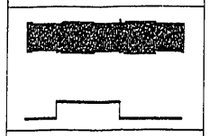
CCD DELAY [VCA] SCHEMATIC DIAGRAM



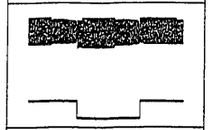
VIDEO SECTION WAVEFORMS

PRE AMP WAVEFORMS

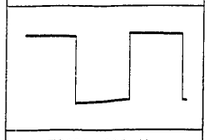
1-B IC101-22 340mVp-p
0.2V/5.0msec. cm
PLAY



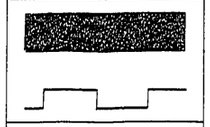
2-B IC101-27 230mVp-p
0.1V/5.0msec. cm
PLAY



3-A IC101-28 3.8Vp-p
1V/5.0msec. cm
REC/PLAY



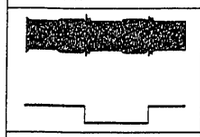
4-A TP101 220mVp-p
0.1V/5.0msec. cm
REC



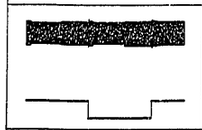
5-A TP102 160mVp-p
50mV/20.0 μsec. cm
REC

LUMINANCE/CHROMA WAVEFORMS

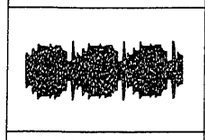
1-B IC201-8 550mVp-p
0.2V/5.0msec. cm
PLAY



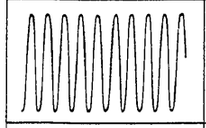
2-B IC201-10 190mVp-p
0.1V/5.0msec. cm
PLAY



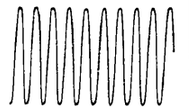
3-A IC201-13 360mVp-p
0.1V/20.0 μsec. cm
REC



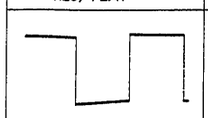
4-A C201-19 410mVp-p
0.1V/100nsec. cm
REC/PLAY



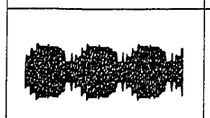
5-A IC201-22 380mVp-p
0.1V/200nsec. cm
REC/PLAY



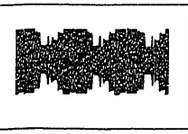
6-A IC201-27 2.6Vp-p
0.5V/5.0msec. cm
REC/PLAY



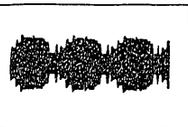
7-A IC201-36 78mVp-p
20mV/20.0 μsec. cm
REC



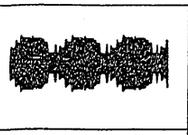
7-B IC201-36 96mVp-p
20mV/20.0 μsec. cm
PLAY



8-A IC201-38 200mVp-p
50mV/20.0 μsec. cm
REC



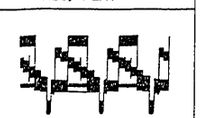
8-B IC201-38 240mVp-p
50mV/20.0 μsec. cm
PLAY



9-A IC201-47 5.0Vp-p
1V/20.0 μsec. cm
REC/PLAY

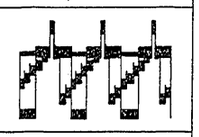
10-A IC201-49 1Vp-p
0.2V/20.0 μsec. cm
REC

11-A IC201-53 350mVp-p
0.1V/20.0 μsec. cm
REC/PLAY

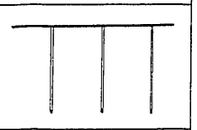


12-A IC201-54 500mVp-p
0.1V/20.0 μsec. cm
REC/PLAY

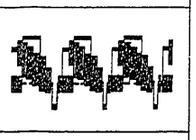
13-A IC203-3 520mVp-p
0.1V/20.0 μsec. cm
REC/PLAY



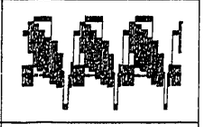
14-A IC204-4 5.0Vp-p
1V/5.0msec. cm
REC/PLAY



15-A IC204-10 2.1Vp-p
0.5V/20.0 μsec. cm
REC/PLAY

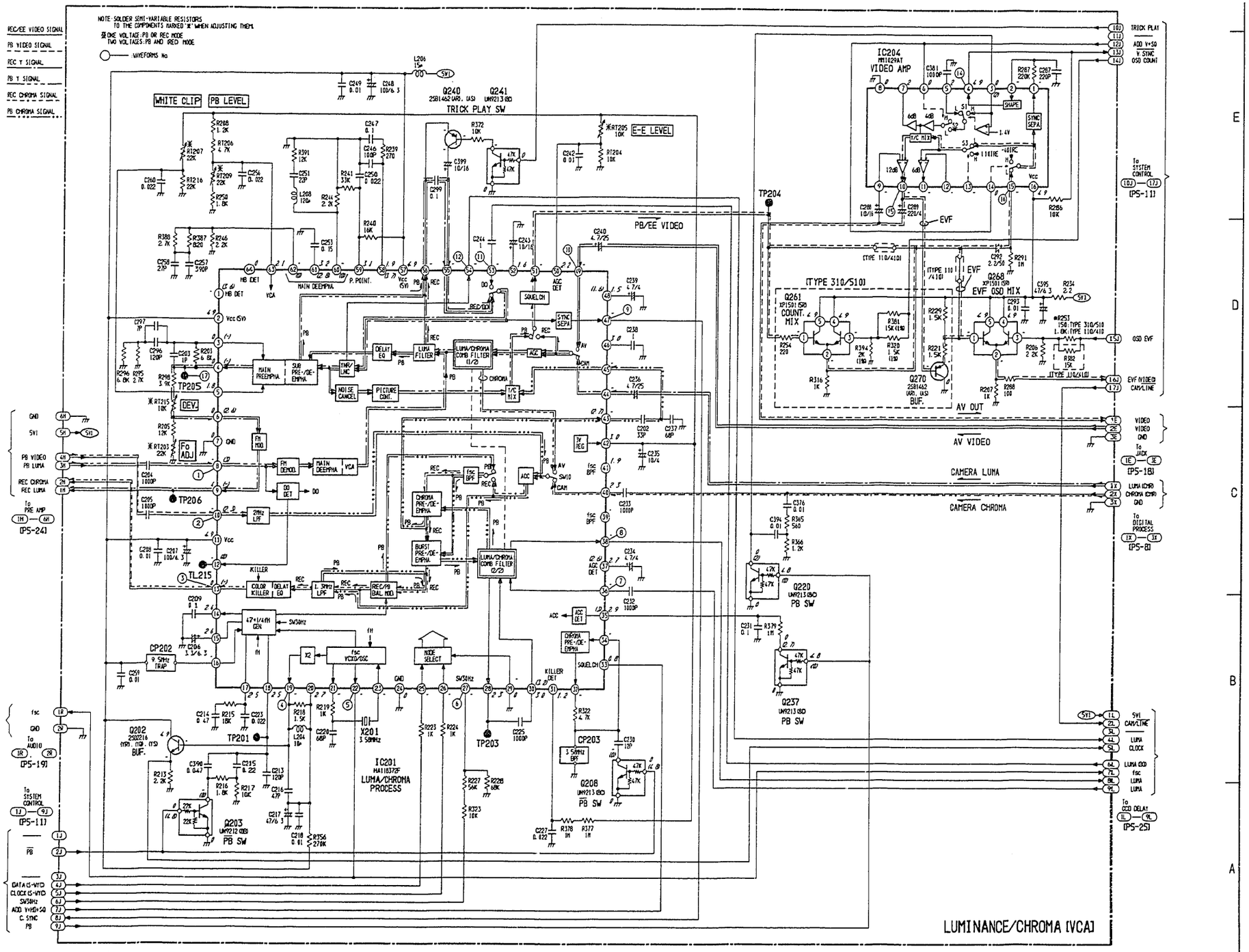


16-A IC204-15 1.1Vp-p
0.2V/20.0 μsec. cm
REC/PLAY

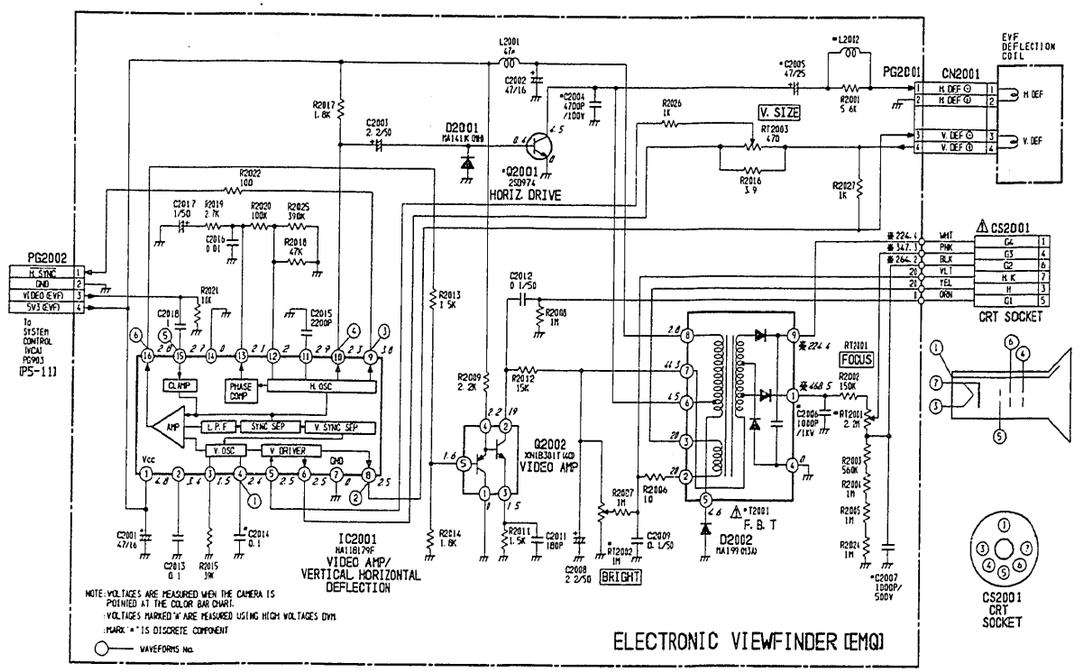


17-A TP205 1Vp-p
0.2V/20.0 μsec. cm
REC

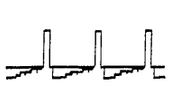
LUMINANCE/CHROMA [VCA] SCHEMATIC DIAGRAM



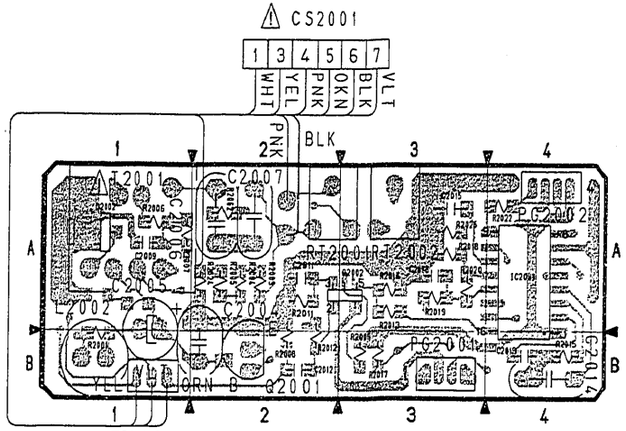
ELECTRONIC VIEWFINDER [EMQ] SCHEMATIC DIAGRAM -TYPE 110. 410-



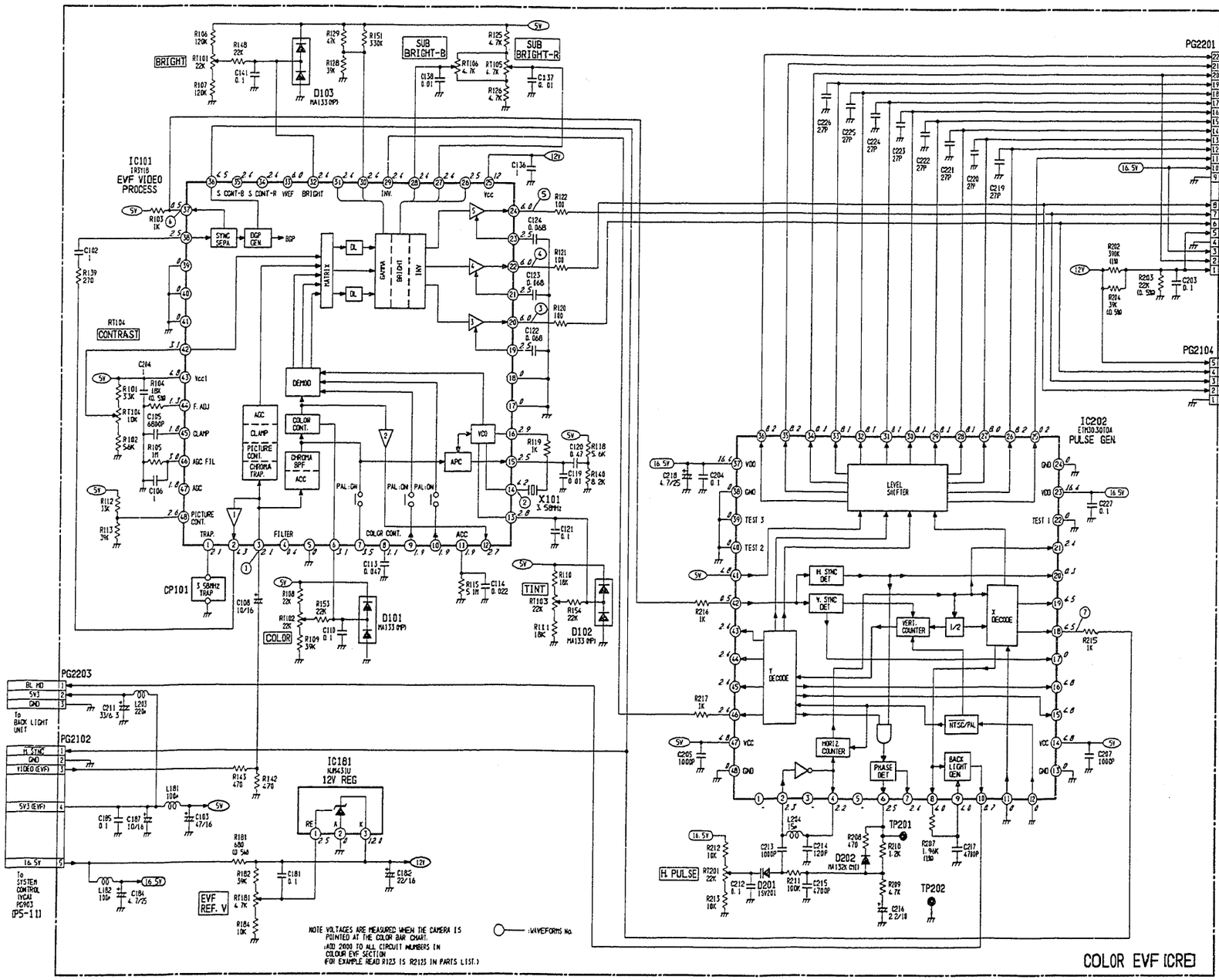
ELECTRONIC VIEWFINDER WAVEFORMS

1-A IC2001-4 950mVpp 0.2V/5.0msec.cm COLOR CHART	2-A IC2001-8 2.3Vp-p 0.5V/5.0msec.cm COLOR CHART	3-A IC2001-9 5.0Vp-p 1V/20.0 μ sec.cm COLOR CHART
4-A IC2001-10 1.7Vp-p 0.5V/20.0 μ sec.cm COLOR CHART	5-A IC2001-15 900mVp-p 0.2V/20.0 μ sec.cm COLOR CHART	6-A IC2001-16 2.8Vp-p 1V/20.0 μ sec.cm COLOR CHART
		

EMQ CIRCUIT BOARD



COLOR EVF [CRE] SCHEMATIC DIAGRAM -TYPE 310, 510-

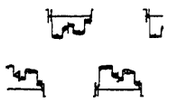


WAVEFORMS

1-A IC2101-3 0.47Vp-p
0.1V/20.0 μ sec. cm
COLOR CHART

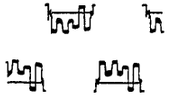
2-A IC2101-14 0.5Vp-p
0.2V/20.0 μ sec. cm
COLOR CHART

3-A IC2101-20 10Vp-p
2V/20.0 μ sec. cm
COLOR CHART

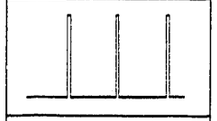


4-A IC2101-22 10Vp-p
2V/20.0 μ sec. cm
COLOR CHART

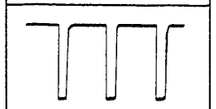
5-A IC2101-24 10Vp-p
2V/20.0 μ sec. cm
COLOR CHART



6-A IC2101-37 5.0Vp-p
1V/20.0 μ sec. cm
COLOR CHART

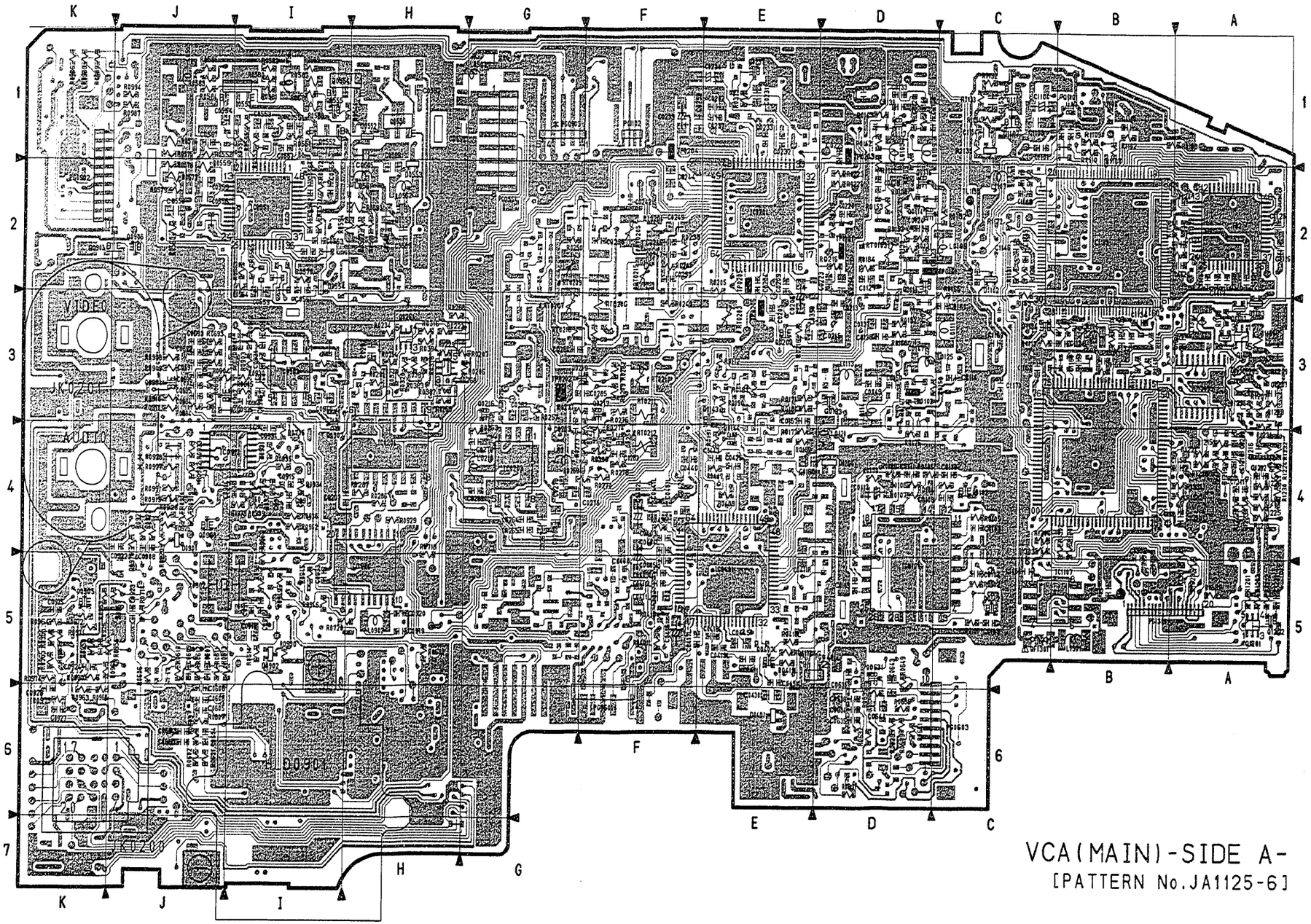


7-A IC2202-18 5.0Vp-p
1V/20.0 μ sec. cm
COLOR CHART



1 2 3 4 5 6 7 8

VCA CIRCUIT BOARD -SIDE·A-
[PATTERN No. JA1125-6] -TYPE 410, 510 ONLY-



VCA(MAIN)-SIDE A-
[PATTERN No.JA1125-6]

IDENTIFICATION OF PARTS LOCATION

VCA [MAIN] (PATTERN No. JA1125-6)

Symbol No.	Parts Location
BL	
BL394	B-7J
BL395	B-7K
BL396	B-7K
BL397	B-6J
BL398	B-6J
BL399	B-6J
C	
C101	B-4D
C102	B-3D
C103	A-5C
C104	A-5C
C107	A-4C
C108	A-4C
C110	A-4C
C111	A-4D
C112	B-4D
C113	A-4D
C118	B-5D
C119	B-5D
C120	B-5D
C121	B-5D
C123	A-2D
C124	A-2D
C127	A-2D
C128	A-1D
C129	A-2D
C130	A-1D
C131	A-1D
C132	B-4D
C133	A-1D
C134	B-3C
C137	A-3D
C138	A-3D
C141	A-3C
C143	B-4C
C144	A-3C
C147	A-3D
C148	B-3D
C149	A-3D
C150	A-3D
C151	B-3E
C153	B-3D
C157	A-3E
C158	B-3E
C162	B-3E
C163	A-5D
C166	A-4E
C167	B-3E
C168	B-3E
C169	B-1D
C177	B-4D
C202	A-1E
C203	B-2E
C204	A-2E
C205	A-3E
C206	A-3E
C207	B-3G
C208	B-2E
C209	A-2E
C213	A-3D
C214	A-2D
C215	A-3E
C216	B-2E
C217	B-2D
C218	B-2E
C220	A-2D
C223	A-2D
C225	A-1D
C227	B-2E
C230	B-1E
C231	A-1E
C232	A-1E
C233	A-1E
C234	A-1E
C235	B-1E
C236	B-1G
C237	A-1E
C239	A-1F
C240	B-1G
C242	A-2F
C243	B-2G
C244	A-2F
C246	A-2F
C247	A-2F
C248	B-3G
C249	A-2F
C250	A-2F
C251	B-2G
C253	B-2F
C256	A-2F
C257	B-3G
C258	B-3G
C259	B-3E
C260	A-3G
C262	A-3G
C263	A-4G
C264	A-4G
C265	A-4G
C266	B-4G
C267	A-4G
C268	B-4G
C269	A-4G
C270	A-4G
C271	B-4G
C272	B-3F
C273	B-3F
C275	B-4G
C276	A-4F
C277	B-4F
C278	A-4G
C279	B-4F
C281	A-4F
C282	A-4F
C283	A-4G
C285	A-3F
C287	A-4I
C288	B-4H
C289	B-3H
C292	B-3H
C293	A-3H
C296	B-2F
C297	B-2F
C298	A-1F
C299	B-2G
C373	B-6J
C375	B-7K
C376	B-4H
C381	B-4H
C390	A-3D
C391	B-3F
C394	B-4H
C395	B-3H
C399	B-2G
C401L	A-4F
C402L	A-4F
C403L	A-4F
C404L	A-4F
C405L	A-5F
C406L	B-4F
C407L	B-4F
C408L	A-5F
C409L	A-5F
C410L	A-5F
C411L	A-5E
C411R	A-5E
C412L	B-5F
C413	B-5F
C415L	B-5F
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C417L	A-5F
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C423	B-4E
C424	A-4F
C425	A-4E
C426	B-4E
C428	B-4E
C430L	A-6E
C431L	A-5E
C432	B-5E
C435	B-6E
C436	B-6D
C437	B-6D
C438	B-5E
C439	B-5E
C440	A-4F
C441L	A-4F
C443	A-4E
C445	A-5E
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C552	A-1I
C553	A-1I
C554	A-1J
C555	A-2J
C556	A-2J
C558	A-2J
C559	A-3I
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C561	A-2I
C562	A-2I
C563	A-2I
C564	A-2I
C565	A-2I
C567	A-1J
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C571	B-2I
C573	B-3J
C574	B-1J
C577	B-2I
C578	B-1J
C579	B-1J
C581	B-1I
C582	A-1H
C585	A-1H
C586	A-2H
C588	A-2H
C589	A-2H
C590	B-1I
C591	A-1H
C601	A-6J
C602	B-6J
C603	A-6J
C604	A-6J
C605	A-6J
C606	A-6J
C607	A-5J
C608	A-6J
C609	A-5J
C610	B-7H
C611	B-6H
C612	B-6H
C613	B-7I
C614	B-7I
C615	B-7I
C616	B-7I
C617	B-7I
C618	B-6J
C619	B-6J
C631	B-6D
C634	A-6D
C635	A-6D
C636	A-6D
C637	B-6D
C638	A-5D
C639	B-5D
C642	B-6C
C643	A-5D
C644	A-6D
C645	B-6C
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C647	B-6C
C648	B-6C
C671	A-1D
C672	B-1E
C691	A-3J
C692	A-3J
C693	A-3J
C694	A-3J
C695	A-3J
C696	A-3J
C901	B-3I
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C907	B-5H
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C911	B-3I
C912	A-4I
C913	A-4I
C914	A-4I
C915	A-4I
C916	A-5I
C917	A-5I
C918	A-5I
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C923	A-5J
C924	A-5K
C925	A-5K
C926	A-5K
C927	A-6K
C928	A-6K
C929	B-5A
C930	B-1G
C931	A-3I
C933	A-5I
C934	A-4I
C935	B-6H
C936	A-3I
C939	B-4I
C940	A-3I
C1101	A-1C
C1102	B-1C
C1103	A-1C
C1104	A-1C
C1106	B-1C
C1107	B-2B
C1108	B-2B
C1109	B-1B
C1110	A-1B
C1111	B-1B
C1112	B-1A
C1113	B-1B
C1114	B-1B
C1115	B-2A
C1116	A-2A
C1117	A-2A
C1118	A-2A
C1119	A-2A
C1120	A-2A
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C1122	A-2A
C1124	A-2A
C1125	A-2A
C1126	A-2A
C1127	B-2B
C1128	B-2B
C1129	B-2B
C1130	A-1B
C1131	A-1B
C1133	B-2B
C1134	A-3B
C1135	B-3B
C1136	A-3B
C1137	A-3B
C1138	A-3B
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C1149	A-2C
C1150	B-2B
C1151	B-2B
C1152	B-2B
C1153	A-1C
C1154	A-1C
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C1170	A-3C
C1172	A-3A
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C1174	B-1C
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C1207	A-3A
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C1211	A-4A
C1212	A-4A
C1216	A-4A
C1217	B-3B
C1219	B-3A
C1301	A-5B
C1302	A-4B
C1303	B-5A
C1304	B-5A
C1305	B-5B
C1306	B-4B
C1307	B-4B
C1308	B-4A
C1309	B-4A
C1310	A-4A
C1311	B-5B
C1312	A-5B
C1313	B-4B
C1316	A-3A
C1317	B-4B
C1318	B-4A
C1319	B-4B
C1320	B-4B
CP	
CP202	B-2D
CP203	B-2D
CP204	B-3F
CP1101	B-3B
D	
D205	A-4D
D401	A-6E
D551	B-2H
D552	A-1H
D553	A-2H
D554	A-2I
D661	B-2J
D901	A-4J
D902	A-5I
D1101	B-1B
D1102	A-2C
D1103	A-3A
D1104	B-4B
D1105	A-1C
D1107	A-3A
D1108	A-3A
D1301	B-3B
D1302	B-3B
D1303	B-3B
HLD	
HLD901	A-6I
IC	
IC101	A-5D
IC201	A-2E
IC202	B-4F
IC203	A-4G
IC204	A-4H
IC401	A-5E
IC402	B-6E
IC551	A-2I
IC601	B-6I
IC631	B-6D
IC671	B-1D
IC901	B-4I
IC902	A-3I
IC903	A-4J
IC904	A-5H
IC905	B-5J
IC907	B-4A
IC1101	B-1B
IC1102	A-2A
IC1103	A-2B
IC1104	B-2B
IC1105	B-3A
IC1106	A-4B
IC1107	A-5B
IC1201	B-3A
IC1202	B-4A
IC1203	B-3B
IC1301	B-5B
IC1302	B-4B
IC1303	A-3A
JK	
JK200	A-6K
JK201	A-3K
L	
L101	B-4D
L104	B-5D
L105	B-5D
L106	A-2C
L108	A-1D
L109	A-1D
L110	B-1D
L111	A-3C
L113	A-3D
L114	A-3D
L115	B-3D
L116	B-3D
L117	B-3E
L120	A-4D
L125	A-3D
L204	B-2E
L206	B-3G
L208	B-2G
L209	B-4G
L210	A-4G
L211	A-4G
L401	B-4E
L552	B-2H
L553	B-2I
L554	B-2J
L555	A-1J
L556	B-2H
L557	B-1I
L558	B-1J
L561	A-2H
L562	A-2H
L564	A-1I
L601	B-7I
L901	B-2J
L902	A-5H
L903	A-1H
L1101	B-2A
L1102	B-2A
L1103	B-2A
L1106	A-3B
L1107	A-2C
L1109	B-3C
L1110	B-4C
L1116	B-1C
L1117	B-1C
L1301	A-5B
L1302	A-3A
PG	
PG101	B-4C
PG401L	A-5E
PG551	A-2G
PG601	A-6F
PG602	B-2K
PG603	A-6C
PG604	B-1D
PG901	B-5K
PG902	A-2K
PG903	A-1G
PG1101	B-2C
PG1102	A-1F
PG1301	A-5B
Q	
Q101	B-4D
Q102	A-4C
Q103	B-4D
Q106	B-4D
Q109	B-5C
Q110	B-5D
Q111	A-2D
Q114	A-2D
Q116	A-2D
Q117	A-1D
Q125	B-3D
Q126	B-3E
Q133	A-3D
Q135	B-4E
Q141	B-5D
Q142	A-5C
Q143	A-3E
Q144	A-4E
Q202	B-2E
Q203	A-3E
Q208	B-1D
Q213	B-4G
Q215	B-4G
Q216	A-3G
Q217	A-3F
Q218	B-3F
Q219	A-3G
Q220	B-4H
Q237	A-1E
Q240	B-1G
Q241	B-2G
Q250	A-4F
Q261	A-3H
Q268	A-3H
Q270	B-3H
Q401L	B-6F
Q403L	A-5E
Q404	B-5E
Q551	B-2H
Q552	A-1I
Q553	A-1I
Q554	A-1I
Q555	A-1I
Q556	A-1H
Q557	A-2H
Q601	B-6J
Q602	B-6H
Q604	B-7I
Q631	A-5D
Q901	A-3I
Q902	A-3J
Q903	A-2K
Q904	A-3J
Q905	A-5K
Q906	A-2J
Q907	A-4I
Q908	A-4J
Q1101	A-1B
Q1103	B-3B
Q1104	A-3C
Q1105	B-3C
Q1106	A-1C
Q1107	A-1C
Q1108	A-3A
Q1109	B-4B
Q1110	B-3B
Q1201	A-5A
Q1202	A-5A
Q1203	B-4B
QF	
QF1301	A-5C
R	
R101	A-5C
R102	A-5C
R103	A-4C
R104	A-4C
R106	A-4D
R107	A-4D
R108	A-4D
R109	A-4D
R110	A-4D
R111	A-4D
R112	A-3E
R117	B-4E
R119	B-4C
R120	B-4D
R121	B-5C
R122	B-5C
R123	B-5D
R124	B-5D
R125	B-5D
R126	B-4C
R130	A-2D
R131	A-2D
R132	A-2C
R133	A-2D
R138	A-2D
R140	A-1D
R141	A-2D
R142	A-1D
R143	A-1D
R146	B-1D
R147	A-3D
R148	B-1D
R149	B-1D
R150	A-3D
R153	A-2D
R157	A-3D
R158	A-3D
R161	B-3E
R162	A-3D
R165	A-2C
R166	B-3E
R169	B-3D
R170	B-3E
R171	B-4C
R172	B-3D
R174	A-3E
R175	B-3E
R176	A-4D
R177	A-4E
R181	A-3E
R184	A-2D
R187	A-4H
R189	A-4E
R190	A-3E
R191	A-4E
R194	A-3E
R198	B-2D
R199	A-2D
R203	B-2E
R205	A-2E
R206	A-3H
R207	A-3H
R208	A-3F
R210	B-2E
R212	B-3J
R213	B-2E
R215	A-2D
R216	A-3E
R217	B-2E
R218	B-2E
R219	A-2D
R221	B-3H
R223	A-2D
R224	A-2D
R227	B-2E
R228	B-2E
R229	A-3H
R234	A-3H
R239	A-2F
R240	A-3F
R241	A-2F
R244	B-2G
R246	B-3G
R250	A-2G
R253	A-3H
R254	A-3H
R255	B-4G
R256	B-4G
R257	A-3G
R258	B-4G
R259	B-4G
R260	B-4G
R261	B-4G
R263	A-4G
R264	A-3G
R265	B-3F
R269	A-4F
R270	A-4F
R273	A-4F
R274	A-4F
R275	A-4F
R276	A-3F
R277	A-3G
R278	A-4F
R279	A-3F
R280	B-3F
R282	A-3F
R286	A-4H
R287	A-4H
R288	A-3H
R289	B-6J
R291	A-3H
R295	B-2F
R296	B-2F
R298	B-2F
R316	A-3H
R320	A-3H
R321	A-3H
R322	B-1E
R323	B-4F
R341	B-4D
R344	B-4D
R346	B-4F
R351	B-4D
R352	B-4D
R356	B-2E
R357	B-3F
R358	B-6J
R363	A-3H
R365	B-4H
R366	B-4H
R372	B-2G
R373	B-3F
R374	B-3F
R377	B-1E
R378	B-1E
R379	A-1E
R381	A-3H
R382	A-3H
R383	B-4E
R385	B-4E
R387	B-2G
R388	B-2G
R391	B-2G
R394	A-3H
R398	A-4F
R401L	A-5F
R402L	B-6E
R403L	B-6F
R404L	B-5F
R405	B-5E
R408	A-4E
R410	B-4E
R415	A-5F
R417L	A-5E
R418L	A-5E
R419L	A-5E
R420	B-6E
R421	B-5E
R422	B-6E
R423	B-6E
R424	B-6E
R425	B-6E
R426	B-6E
R427	B-6D
R428	B-5E
R429L	B-5E
R435	B-5F
R436L	A-4F
R441	B-6E
R445	B-6H
R447	A-4E
R544	A-1I
R551	A-1I
R552	A-1I
R553	A-1I
R555	A-1I
R556	A-1I
R558	A-1J
R559	A-2J
R560	A-2J
R563	A-2I
R564	A-2I
R565	A-2I
R570	A-2I
R571	A-2I
R572	A-2I
R575	A-1J
R576	A-1J
R577	A-2J
R578	A-2J
R579	A-2J
R580	A-1I
R581	A-1I
R582	A-1I
R583	A-1J
R584	A-1J
R585	A-1J
R586	A-1I
R587	A-1I
R588	A-1I
R589	A-1I
R591	A-2H
R592	A-2H
R593	A-2H
R594	A-2I
R601	A-6J
R602	A-6J
R603	A-6J
R605	A-5J
R607	A-6J
R609	B-6J
R610	A-5J
R611	A-5J
R612	A-5J
R613	A-5J
R614	A-5I
R616	B-6H
R619	B-7I
R620	B-7I
R621	B-7I
R622	B-7I
R623	B-7I
R624	B-6J
R631	A-6D
R632	A-6D
R634	B-5D
R635	A-6D
R636	A-6D
R638	A-6D
R639	A-6D
R640	B-6C
R641	A-6D
R642	B-6D
R643	B-6D
R645	B-6C
R649	A-5D
R661	B-2J
R662	B-2J
R663	A-4I
R671	B-1E
R672	B-1E
R681	B-5H
R682	A-5H
R691	A-3J
R692	A-3J
R693	A-3J
R694	A-3J
R695	A-3J
R696	A-3J
R714	A-5J
R715	A-4I
R718	A-4H
R720	A-5I
R901	A-3I
R902	A-3I
R903	A-3I
R904	A-3J
R905	A-3I
R906	B-2J
R907	B-2J
R908	A-3J
R909	A-3J
R910	A-3J
R911	A-3J
R912	B-4J
R913	A-4J
R914	A-4J
R915	B-4J
R916	B-4J
R917	B-5J
R918	B-5J
R919	A-4J
R920	A-4J
R921	A-4J
R922	A-4J
R923	B-5J
R924	B-4J
R925	A-4J
R926	A-4J
R927	A-4J
R929	A-4H
R930	A-3I
R931	A-4I
R932	A-4J
R933	A-4J
R934	A-4I
R935	A-4I
R936	A-4I
R937	A-4I
R938	A-4I
R939	A-4I
R940	A-4I
R942	B-4I
R943	B-4I
R944	B-4I
R945	A-5I
R946	A-5I
R949	A-5I
R951	A-5I
R952	A-4I
R954	A-5J
R955	B-5J
R956	B-5J
R957	A-5K
R958	A-5K
R959	A-5J
R960	A-5K
R961	A-5K
R962	A-6K
R963	A-6K
R964	A-5K
R965	A-5K
R966	A-5K
R967	A-5K
R969	B-5J
R970	A-4J
R971	A-5K
R972	A-5K
R973	B-4J
R974	A-5K
R975	A-6K
R976	B-5I
R977	B-4H
R978	B-1K
R979	B-1K
R980	B-1K
R981	B-1J
R982	B-1J
R983	B-1J
R984	B-1J
R985	B-1J
R986	A-1K
R987	A-1J
R988	A-1K
R989	A-1K
R990	A-5I
R991	A-4J
R994	A-1J
R995	B-5A
R1102	A-1B
R1103	B-1B
R1104	A-1B
R1105	A-2A
R1107	A-1B
R1108	A-1A
R1109	A-1B
R1110	A-1B
R1111	A-2C
R1113	A-2C
R1114	A-3B
R1116	A-3B
R1117	A-3C
R1118	A-3B
R1119	A-3B
R1120	B-3B
R1121	B-3B
R1122	B-3B
R1123	B-3B
R1124	B-3C
R1125	B-3B
R1126	B-3B
R1130	A-2C
R1131	A-2C
R1132	A-1C
R1133	A-1C
R1134	A-1C
R1135	A-1C
R1136	B-3A
R1137	B-3A
R1138	B-3A
R1139	B-4C
R1140	B-4B
R1141	B-4C
R1142	B-4B
R1143	B-5C
R1146	A-3B
R1147	A-3B
R1148	B-4C
R1149	B-4C
R1150	B-4C
R1151	B-4C
R1152	A-3B
R1153	A-2C
R1158	B-4B
R1159	B-4B
R1160	A-3A
R1162	B-4B
R1164	B-3B
R1170	A-3A
R1171	B-5C
R1172	A-2C
R1201	A-5A
R1202	A-5A
R1203	A-5A
R1204	B-3A
R1205	B-3A
R1206	B-3A
R1207	A-3A
R1208	A-3A
R1209	A-3A
R1213	A-3A
R1214	A-4A
R1215	A-4A
R1217	A-4A
R1218	A-4A
R1219	A-4A
R1220	A-4A
R1221	A-4A
R1222	A-4A
R1223	A-4A
R1224	A-4A
R1225	A-4A
R1226	A-4A
R1230	A-4A
R1231	A-3A
R1232	A-4A
R1233	A-4A
R1234	B-3B
R1235	A-3A
R1237	B-3B
R1239	B-3B
R1301	A-4B
R1302	A-4B
R1303	A-4C
R1304	A-4C
R1305	B-5B
R1308	B-5A
R1309	B-5B
R1310	B-5B
R1313	B-4B
R1315	B-4A
R1316	B-4A
R1317	A-5A
R1322	A-5A
R1323	A-5A
R1330	B-3B
R1331	A-4A
R1332	A-4A
RT	
RT103	A-2D
RT204	A-2F
RT205	A-2F
RT206	A-3F
RT207	A-3G
RT209	A-2G
RT210	A-3F
RT211	A-3F
RT212	A-4F
RT215	A-2F
RT216	A-3G
SW	
SW901	B-1K
T	
T551	B-1H
TL	
TL1139	A-2C
TL1301	B-5A
TL1302	B-5A
TL1303	B-5A
TL1304	B-5A
TL1305	B-5A
TL1306	B-5A
TL1307	B-5A
TL1308	B-5A
TL1309	B-5A
TL1311	B-5A
TL1312	B-5A
TL1313	B-5A
TL1314	B-5A
TL1318	A-5B
TP	
TP101	A-2D
TP102	A-3D
TP201	A-2D
TP202	A-3G
TP203	A-1D
TP204	A-1F
TP205	A-2E
TP206	A-3E
X	
X201	B-2D
X901	B-3I
X902	A-5J
X1101	B-2B

VCA[MAIN] – SIDE A – DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks(＊) in the circuit board diagrams.

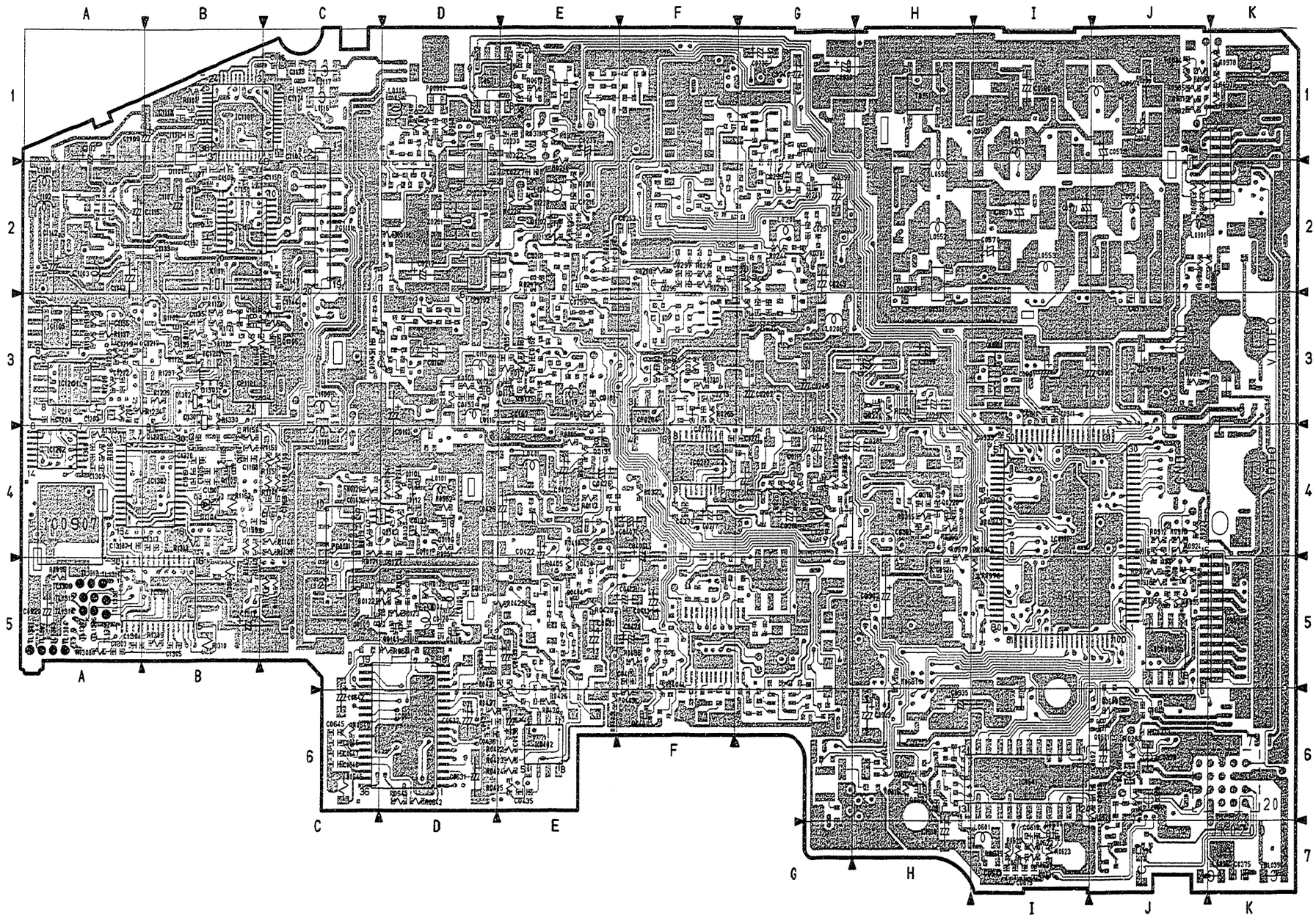
SYMBOL No.	TYPE410	TYPE510
L903	○	×
PG903	4P	5P
Q261	×	○
R222	JUMPER	×
R229	×	○
R254	×	○
R316	×	○
R320	×	○
R321	JUMPER	×
R363	JUMPER	×
R376	×	JUMPER
R381	×	○
R382	○	×
R394	×	○
R723	×	JUMPER
R927	○	×
R928	×	JUMPER

VCA[MAIN] – SIDE B – DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks(＊) in the circuit board diagrams.

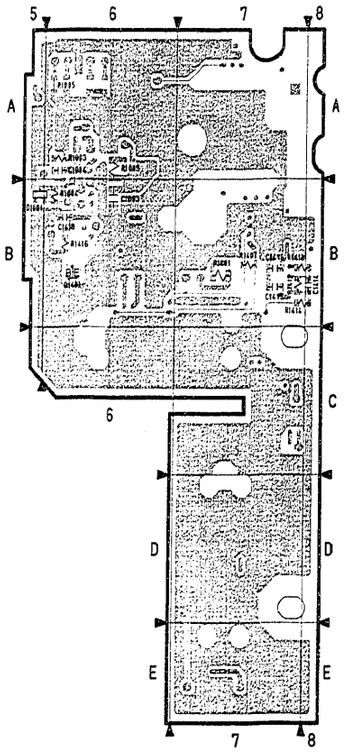
SYMBOL No.	TYPE410	TYPE510
C921	○	×
Q270	×	○
R221	×	○
R976	○	×

VCA CIRCUIT BOARD -SIDE -B-
[PATTERN No. JA1125-6] -TYPE 410.510 ONLY-

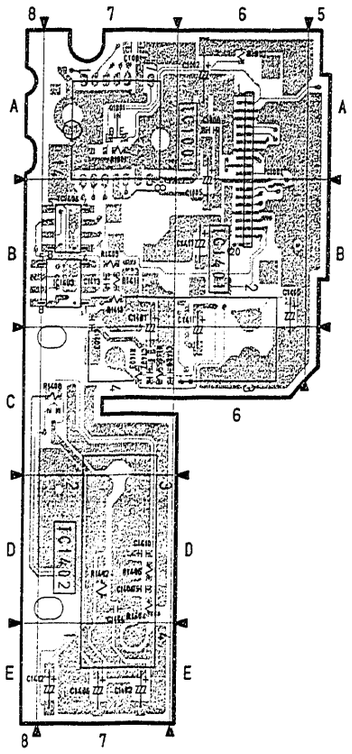


VCA(MAIN)-SIDE B-
[PATTERN No.JA1125-6]

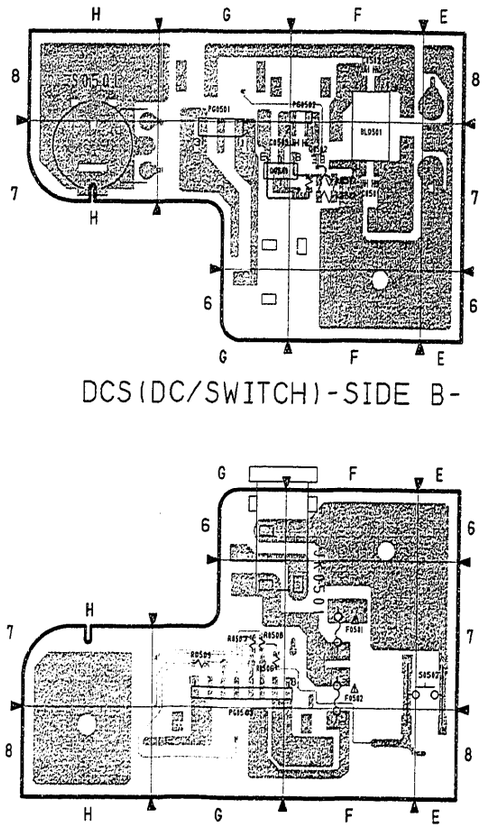
SPE. DCS CIRCUIT BOARD [PATTERN No. JA1125-6]
CRE. HTS9551C CIRCUIT BOARD



SPE(SENSOR/GYRO)
-SIDE A-
[PATTERN No.JA1125-6]

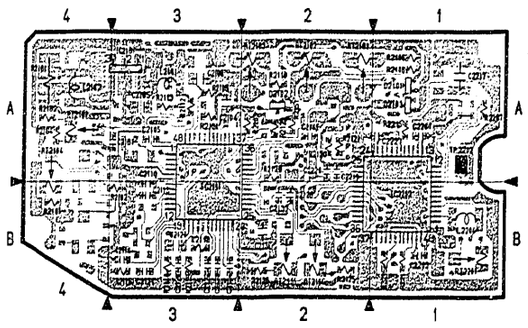


SPE(SENSOR/GYRO)
-SIDE B-

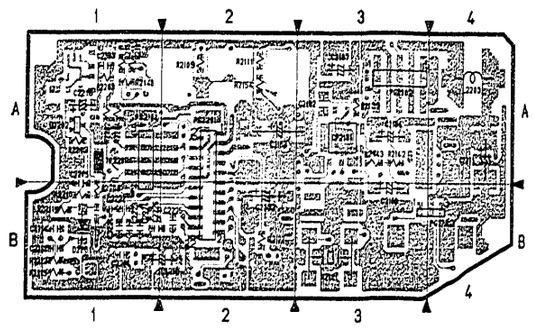


DCS(DC/SWITCH)-SIDE B-

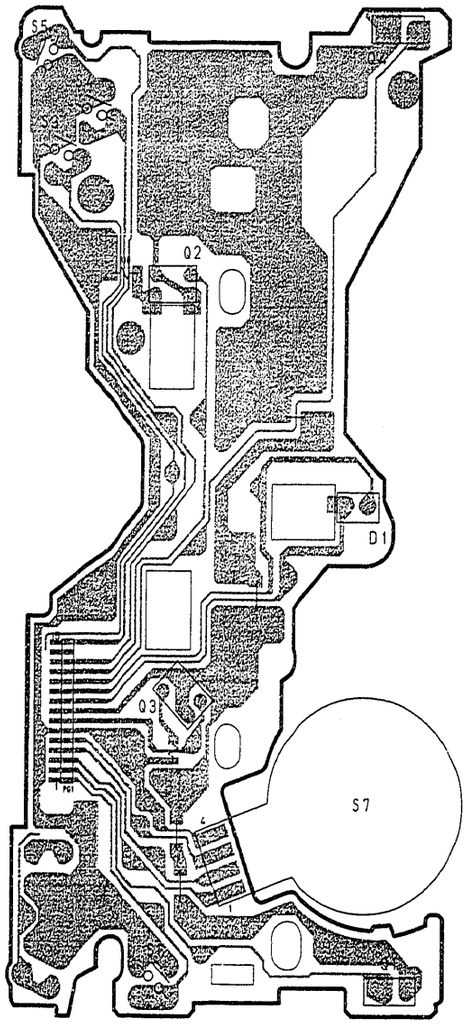
DCS(DC/SWITCH)-SIDE A-
[PATTERN No.JA1125-6]



CRE(COLOR EVF)-SIDE A-
[PATTERN No.JA1119-5]



CRE(COLOR EVF)-SIDE B-



TROUBLE SENSOR[HTS9551C]
[PATTERN No.155190-2]

IDENTIFICATION OF PARTS LOCATION

DCS [DC/SWITCH]

Symbol No.	Parts Location
BL	
BL501	B-7F
C	
C501	B-7F
C502	B-8F
C503	B-7F
F	
F501	A-7F
F502	A-7F
JK	
JK501	A-7F
PG	
PG501	B-7G
PG502	B-8F
PG503	A-7G
Q	
Q501	B-7G
Q502	B-7F
R	
R501	B-7F
R502	B-7F
R503	B-7F
R506	A-7G
R507	A-7G
R508	A-7G
R509	A-7G
S	
S501	B-8H
S502	A-7E

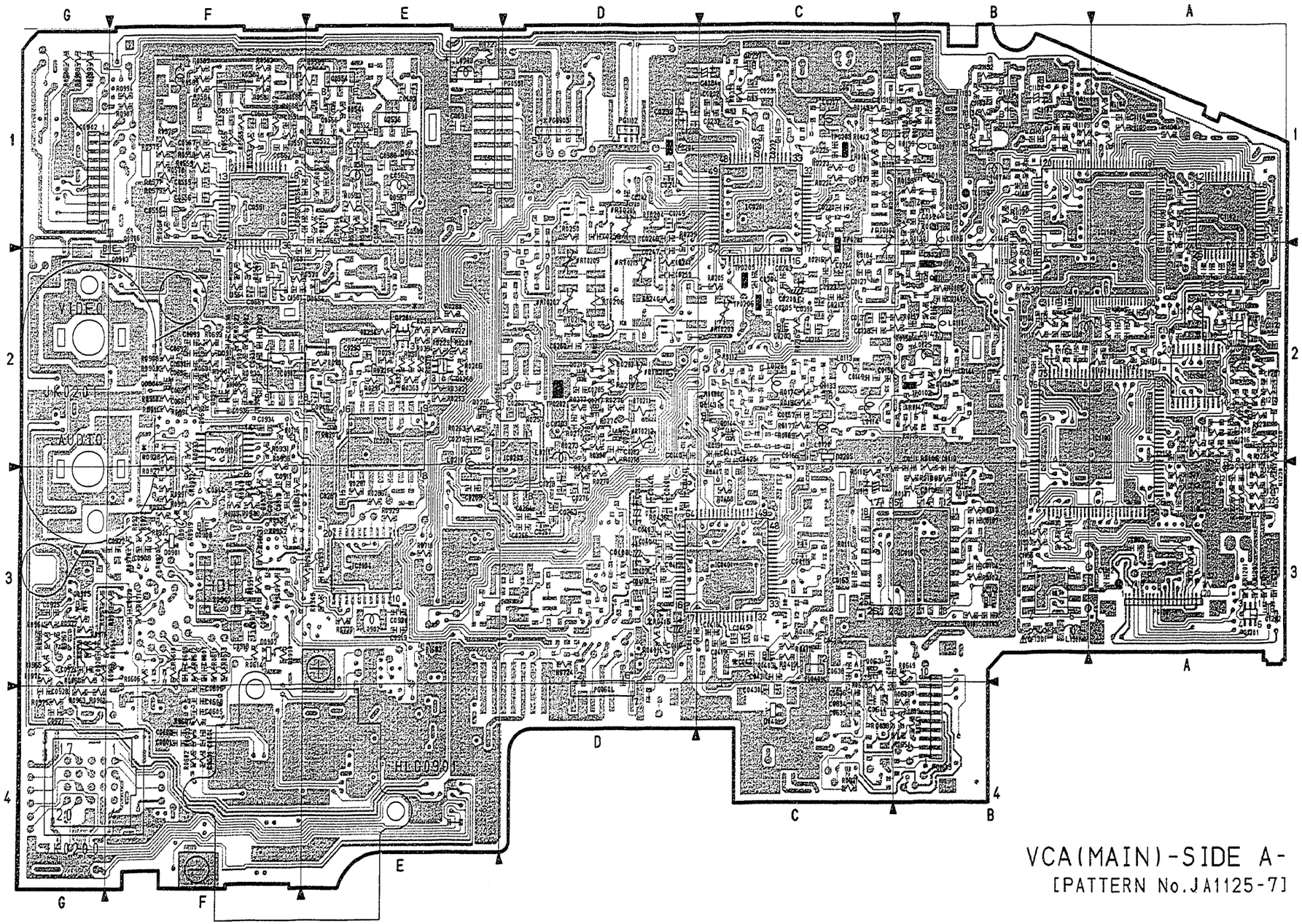
CRE [COLOR EVF]

Symbol No.	Parts Location
C	
C2102	B-3A
C2104	A-3A
C2105	A-3A
C2106	A-3A
C2108	B-3B
C2110	A-3B
C2113	A-3B
C2114	A-3B
C2119	A-3B
C2120	A-3B
C2121	A-3B
C2122	A-3B
C2123	A-3B
C2124	A-3B
C2136	A-2B
C2137	A-2B
C2138	A-2B
C2141	A-2A
C2181	A-3A
C2182	B-2B
C2183	B-2A
C2184	B-3A
C2185	A-3A
C2187	B-3A
C2203	B-1A
C2204	B-1B
C2205	A-1B
C2207	A-1A
C2211	B-4A
C2212	B-1B
C2213	B-1B
C2214	B-1B
C2215	B-1A
C2216	B-1A
C2217	A-1A
C2218	B-2B
C2219	A-2A
C2220	A-2A
C2221	B-1B
C2222	B-1B
C2223	B-1B
C2224	B-1B
C2225	B-2B
C2226	B-1B
C2227	A-1A
CP	
CP2101	B-3A
D	
D2101	A-1A
D2102	A-2A
D2103	A-1A
D2201	B-1B
D2202	B-1A
IC	
IC2101	A-3B
IC2181	A-3A
IC2202	A-1B
L	
L2181	A-3A
L2182	A-4A
L2203	B-4A
L2204	A-1B
PG	
PG2102	B-3A
PG2104	B-1A
PG2201	B-2A
PG2203	B-4B
R	
R2101	A-4B
R2102	A-3B
R2103	A-2A
R2104	A-3A
R2105	A-3A
R2106	A-1A
R2107	B-1A
R2108	A-1A
R2109	B-2A
R2110	A-2A
R2111	B-2A
R2112	A-3A
R2113	A-3A
R2115	A-3B
R2118	A-3B
R2119	A-3B
R2120	A-2A
R2121	A-2A
R2122	B-2B
R2125	A-2B
R2126	A-2B
R2128	A-2A
R2129	A-2A
R2139	B-3A
R2140	A-3B
R2142	B-3A
R2143	B-3A
R2148	B-1A
R2151	A-2A
R2153	B-1A
R2154	B-2A
R2181	A-4A
R2182	A-4A
R2184	A-4A
R2202	B-1A
R2203	B-1A
R2204	B-1A
R2207	A-1A
R2208	B-1B
R2209	B-1A
R2210	B-1B
R2211	B-1B
R2212	B-1B
R2213	B-1B
R2215	A-1A
R2216	A-1B
R2217	A-1B
RT	
RT2101	A-2A
RT2102	A-2A
RT2103	A-2A
RT2104	A-4B
RT2105	A-2B
RT2106	A-2B
RT2181	A-4A
RT2201	A-1B
TP	
TP2201	B-1A
TP2202	A-1A
X	
X2101	B-3B

SPE [SENSOR/GYRO]

Symbol No.	Parts Location
C	
C1001	B-7A
C1002	B-6A
C1003	A-6B
C1004	A-6A
C1005	B-6B
C1006	B-6A
C1401	B-7B
C1402	B-7E
C1403	B-7B
C1404	B-7D
C1405	B-6B
C1406	B-7E
C1407	B-7C
C1408	B-7D
C1409	B-7C
C1410	B-7D
C1411	B-6B
C1412	B-7E
C1413	B-7B
C1414	A-8A
C1415	A-7B
C1416	A-7B
C1417	B-6B
C1418	A-6B
D	
D1001	A-5B
IC	
IC1001	B-7A
IC1401	B-6B
IC1402	B-7D
IC1403	B-7B
IC1404	B-7B
PG	
PG1001	B-6A
Q	
Q1001	B-7A
Q1401	A-6B
R	
R1001	B-7A
R1002	B-6A
R1003	A-6A
R1004	A-6B
R1009	A-6A
R1401	A-7B
R1402	B-7D
R1403	B-7C
R1404	B-7D
R1405	B-7C
R1406	B-7D
R1407	A-7B
R1408	B-7C
R1409	B-7B
R1410	A-7B
R1411	B-7B
R1412	A-7B
R1413	B-7B
R1414	A-7B
R1416	A-6B

VCA CIRCUIT BOARD -SIDE·A-
[PATTERN No. JA1125-7]



VCA(MAIN)-SIDE A-
[PATTERN No.JA1125-7]

IDENTIFICATION OF PARTS LOCATION

VCA [MAIN] (PATTERN No. JA1125-7)

Symbol No.	Parts Location
BL	
BL394	B-4F
BL395	B-4G
BL396	B-4G
BL397	B-4F
BL398	B-4F
BL399	B-4F
C	
C101	B-3B
C102	B-2B
C103	A-3B
C104	A-3B
C107	A-3B
C108	A-3B
C110	A-3B
C111	A-3B
C112	B-3B
C113	A-3C
C118	B-3B
C119	B-3B
C120	B-3C
C121	B-3C
C123	A-2B
C124	A-1B
C127	A-2C
C128	A-1B
C129	A-1C
C130	A-1B
C131	A-1C
C132	B-3C
C134	B-2B
C137	A-2C
C138	A-2C
C141	A-2B
C143	B-3B
C144	A-2B
C147	A-2B
C148	B-2C
C149	A-2C
C150	A-2C
C151	B-2C
C153	B-2C
C157	A-2C
C158	B-2C
C162	B-2C
C163	A-3C
C165	A-2C
C167	B-2C
C168	B-2C
C169	B-1C
C177	B-3B
C202	A-1C
C203	B-2C
C204	A-2C
C205	A-2C
C206	A-2C
C207	B-2D
C208	B-2C
C209	A-2C
C213	A-2C
C214	A-2C
C215	A-2C
C216	B-1C
C217	B-2C
C218	B-1C
C220	A-1C
C223	A-2C
C225	A-1C
C227	B-1C
C230	B-1C
C231	A-1C
C232	A-1C
C233	A-1C
C234	A-1C
C235	B-1C
C236	B-1D
C237	A-1C
C238	A-1D
C239	A-1D
C240	B-1D
C242	A-1D
C243	B-2E
C244	A-1D
C246	A-1D
C247	A-2D
C248	B-2D
C249	A-1D
C250	A-2D
C251	B-1D
C253	B-1D
C256	A-1D
C257	B-2D
C258	B-2D
C259	B-2C
C260	A-2D
C262	A-2D
C263	A-3D
C264	A-3D
C265	A-3D
C266	B-3D
C267	A-3D
C268	B-2E
C269	A-3E
C270	A-2E
C271	B-2D
C272	B-2D
C273	B-2D
C275	B-3D
C276	A-3D
C277	B-3D
C278	A-3D
C279	B-3D
C280	B-3D
C281	A-2D
C282	A-2D
C283	A-2D
C285	A-2D
C287	A-3E
C288	B-2E
C289	B-2E
C292	B-2E
C293	A-2E
C296	B-2D
C297	B-2D
C299	B-1D
C373	B-4F
C375	B-4G
C376	B-3E
C381	B-3E
C390	A-2C
C391	B-2D
C394	B-3E
C395	B-2E
C399	B-1E
C401L	A-3D
C402L	A-3D
C403L	A-3D
C404L	A-3D
C405L	A-3D
C406L	B-3D
C407L	B-3D
C408L	A-3D
C409L	A-3D
C410L	A-3D
C411L	A-3D
C411R	A-3C
C412L	B-3D
C413	B-3D
C415L	B-3D
C415	A-3D
C417L	A-3C
C418L	A-3C
C419L	A-3C
C420	B-3D
C421	A-3C
C422	B-3C
C423	B-3C
C424L	A-3D
C425	A-2C
C426	B-3C
C428	B-3C
C429L	A-3C
C430L	A-4C
C431L	A-3C
C432	B-3C
C435	B-4C
C436	B-4C
C437	B-4C
C438	B-4C
C439	B-3C
C440	A-2D
C441L	A-3D
C443	A-2C
C445	A-3C
C551	A-1F
C552	A-1F
C553	A-1F
C554	A-1F
C555	A-1F
C556	A-1F
C558	A-1F
C559	A-2F
C560	A-2F
C561	A-2F
C562	A-1F
C563	A-1E
C564	A-1F
C565	A-1E
C567	A-1F
C570	B-2E
C571	B-1F
C573	B-2F
C574	B-1F
C577	B-1F
C578	B-1F
C579	B-1F
C581	B-1E
C582	A-1E
C585	A-1E
C586	A-1E
C588	A-1E
C589	A-1E
C590	B-1F
C591	A-1E
C601	A-4F
C602	B-4F
C603	A-4F
C604	A-4F
C605	A-4F
C606	A-4F
C607	A-3F
C608	A-4F
C609	A-3F
C610	B-4E
C611	B-4E
C612	B-4E
C613	B-4E
C614	B-4F
C615	B-4F
C616	B-4F
C617	B-4F
C618	B-4F
C619	B-4F
C631	B-4C
C634	A-4C
C635	A-4C
C636	A-4C
C637	B-4C
C638	A-3C
C639	B-3C
C642	B-4B
C643	A-3C
C644	A-4C
C645	B-4B
C646	B-4B
C647	B-4B
C648	B-4B
C671	A-1C
C672	B-1C
C691	A-2F
C692	A-2F
C693	A-2F
C694	A-2F
C695	A-2F
C696	A-2F
C901	B-2F
C902	A-2F
C903	B-4E
C905	B-2F
C906	A-2F
C907	B-3E
C908	A-3F
C909	B-2F
C910	B-2F
C911	B-2F
C912	A-3F
C913	A-3F
C914	A-3F
C915	A-3F
C916	A-3F
C917	A-3F
C918	A-3F
C919	A-3E
C920	A-3E
C921	B-3E
C922	A-3F
C923	A-3F
C924	A-3G
C925	A-3G
C926	A-3G
C927	A-4G
C928	A-4G
C929	B-3A
C930	B-1E
C931	A-2F
C933	A-3E
C934	A-2F
C935	B-4E
C936	A-2F
C938	A-2F
C940	A-2E
C1101	A-1B
C1102	B-1B
C1103	A-1B
C1104	A-1B
C1106	B-1B
C1107	B-1A
C1108	B-1B
C1109	B-1A
C1110	A-1A
C1111	B-1A
C1112	B-1A
C1113	B-1A
C1114	B-1A
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C1117	A-2A
C1118	A-2A
C1119	A-2A
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C1122	A-1A
C1124	A-1A
C1125	A-1A
C1126	A-1A
C1127	B-1A
C1128	B-1A
C1129	B-1A
C1130	A-1B
C1131	A-1B
C1133	B-2A
C1134	A-2A
C1135	B-2A
C1136	A-2A
C1137	A-2A
C1138	A-2B
C1139	B-2A
C1141	B-2A
C1142	B-1A
C1143	B-2A
C1144	B-2B
C1145	A-2B
C1146	A-1B
C1147	B-2B
C1148	A-1B
C1149	A-2B
C1150	B-1B
C1151	B-1B
C1153	A-1B
C1154	A-1B
C1155	B-2A
C1156	A-3B
C1158	A-2A
C1159	B-3B
C1160	A-2B
C1161	A-2A
C1162	A-2B
C1163	B-2A
C1164	B-2B
C1165	B-2A
C1166	B-3B
C1167	B-3B
C1168	B-2B
C1169	A-2B
C1170	A-2B
C1172	A-2A
C1173	B-1B
C1174	B-1B
C1201	A-3A
C1202	B-2A
C1203	B-2A
C1204	B-2A
C1205	A-2A
C1207	A-2A
C1208	A-2A
C1210	A-2A
C1211	A-3A
C1212	A-3A
C1216	A-2A
C1217	B-2A
C1301	A-3A
C1302	A-3A
C1303	B-3A
C1304	B-3A
C1305	B-3A
C1306	B-3A
C1307	B-3A
C1308	B-2A
C1309	B-2A
C1310	A-3A
C1311	B-3B
C1312	A-3A
C1313	B-3B
C1316	A-2A
C1317	B-3A
C1318	B-3A
C1319	B-3A
C1320	B-2A
CP	
CP202	B-2C
CP203	B-1C
CP204	B-2D
CP1101	B-2B
D	
D205	A-2C
D401	A-4C
D551	B-2E
D552	A-1E
D553	A-1E
D554	A-2E
D661	B-1F
D901	A-3F
D902	A-3F
D1101	B-1A
D1102	A-2B
D1104	B-3A
D1105	A-1B
D1107	A-2A
D1108	A-2A
D1301	B-2A
D1302	B-2A
D1303	B-2A
HLD	
HL0901	A-4E
IC	
IC101	A-3B
IC201	A-1C
IC202	B-2D
IC203	A-2D
IC204	A-2E
IC401	A-3C
IC402	B-4C
IC551	A-1F
IC601	B-4F
IC671	B-1C
IC901	B-3F
IC902	A-2F
IC903	A-2F
IC904	A-3E
IC905	B-3F
IC907	B-3A
IC1101	B-1B
IC1102	A-1A
IC1103	A-1A
IC1105	B-2A
IC1106	A-2A
IC1107	A-3B
IC1201	B-2A
IC1202	B-2A
IC1203	B-2A
IC1301	B-3A
IC1302	B-3A
IC1303	A-2A
JK	
JK200	A-4G
JK201	A-2G
L	
L101	B-3C
L104	B-3C
L105	B-3C
L106	A-1B
L108	A-1C
L109	A-1B
L110	B-1B
L111	A-2B
L113	A-2C
L114	A-2C
L115	B-2C
L116	B-2C
L117	B-2C
L120	A-2C
L125	A-2B
L129	A-2C
L204	B-1C
L206	B-2E
L208	B-1D
L209	B-3E
L210	A-2E
L211	A-2D
L217	A-1C
L401	B-2C
L552	B-1E
L553	B-2F
L554	B-1F
L555	A-1F
L556	B-1E
L557	B-1F
L558	B-1F
L561	A-1E
L562	A-1E
L601	B-4E
L901	B-1F
L902	A-3E
L903	A-1E
L1101	B-1A
L1102	B-1A
L1103	B-2A
L1106	A-2B
L1107	A-1B
L1109	B-2B
L1110	B-2B
L1116	B-1B
L1117	B-1B
L1301	A-3B
L1302	A-2A
PG	
PG101	B-3B
PG401L	A-3C
PG551	A-1D
PG601	A-4D
PG602	B-1G
PG603	A-4B
PG604	B-1C
PG901	B-3G
PG902	A-1G
PG903	A-1D
PG1101	B-1B
PG1102	A-1D
PG1301	A-3A
Q	
Q101	B-3B
Q102	A-3B
Q103	B-3B
Q106	B-3C
Q109	B-3B
Q110	B-3C
Q111	A-2B
Q114	A-1B
Q116	A-1B
Q117	A-1C
Q125	B-2C
Q126	B-2C
Q133	A-2C
Q135	B-2C
Q141	B-3B
Q142	A-3B
Q143	A-2C
Q144	A-2C
Q202	B-1C
Q203	A-2C
Q208	B-1C
Q213	B-3E
Q215	B-2D
Q216	A-2E
Q217	A-2D
Q218	B-2D
Q219	A-2D
Q220	B-3E
Q237	A-1C
Q240	B-1D
Q241	B-1D
Q250	A-2D
Q261	A-2E
Q268	A-2E
Q270	B-2E
Q401L	B-4D
Q403L	A-3C
Q404	B-3C
Q551	B-2E
Q552	A-1E
Q553	A-1F
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Q557	A-1E
Q601	B-4F
Q602	B-4E
Q604	B-4F
Q631	A-3C
Q671	B-1C
Q901	A-2F
Q902	A-2F
Q903	A-2F
Q904	A-2F
Q905	A-3G
Q906	A-2F
Q907	A-2E
Q908	A-3F
Q1101	A-1B
Q1103	B-2A
Q1104	A-2B
Q1105	B-2B
Q1106	A-1B
Q1107	A-1B
Q1108	A-2A
Q1109	B-3B
Q1110	B-2B
Q1201	A-3A
Q1202	A-3A
Q1203	B-2A
Q1204	B-2A
QF	
QF1301	A-3B
R	
R101	A-3B
R102	A-3B
R103	A-3B
R104	A-3B
R106	A-3B
R107	A-3B
R108	A-3B
R109	A-3C
R110	A-3C
R111	A-3C
R112	A-2C
R117	B-3C
R119	B-3B
R120	B-3B
R121	B-3B
R122	B-3B
R123	B-3B
R124	B-3B
R125	B-3C
R126	B-3B
R130	A-1B
R131	A-1B
R132	A-1B
R133	A-1B
R138	A-1B
R140	A-1B
R141	A-1C
R142	A-1C
R143	A-1C
R146	B-1B
R147	A-2B
R148	B-1C
R149	B-1C
R150	A-2B
R153	A-1C
R157	A-2B
R158	A-2B
R161	B-2C
R162	A-2B
R165	A-2B
R166	B-2C
R169	B-2C
R170	B-2C
R171	B-3B
R172	B-2C
R174	A-2C
R175	B-2C
R176	A-2B
R177	A-2C
R184	A-2C
R189	A-2C
R190	A-2C
R191	A-2C
R194	A-2C
R198	B-1B
R199	A-1B
R203	B-2C
R206	A-2E
R207	A-2E
R208	A-2D
R212	B-2F
R213	B-1C
R215	A-2C
R216	A-2C
R217	B-2C
R218	B-1C
R219	A-1C
R221	B-2E
R222	A-2E
R223	A-1C
R224	A-1C
R227	B-1C
R228	B-1C
R229	A-2E
R234	A-2E
R239	A-1D
R240	A-2D
R241	A-2D
R244	B-1D
R246	B-2D
R250	A-1D
R253	A-2E
R254	A-2E
R255	B-3E
R256	B-3E
R257	A-2D
R258	B-3D
R259	B-3D
R260	B-3D
R261	B-3D
R263	A-2E
R264	A-2E
R265	B-2D
R269	A-3D
R270	A-3D
R273	A-2D
R274	A-2D
R275	A-2D
R276	A-2D
R277	A-2D
R278	A-2D
R279	A-2D
R280	B-2D
R282	A-2D
R286	A-3E
R287	A-3E
R288	A-2E
R289	B-4F
R291	A-2E
R295	B-2D
R296	B-2D
R298	B-2D
R316	A-2E
R320	A-2E
R321	A-2E
R322	B-1C
R323	B-3D
R341	B-3B
R344	B-3B
R346	B-3D
R351	B-3C
R352	B-3C
R356	B-1C
R357	B-2D
R358	B-4F
R363	A-2E
R365	B-3E
R366	B-3E
R372	B-1D
R373	B-2D
R374	B-2D
R376	A-2E
R377	B-1C
R378	B-1C
R379	A-1C
R381	A-2E
R382	A-2E
R383	B-2C
R385	B-2C
R387	B-2D
R388	B-2D
R391	B-2D
R394	A-2E
R398	A-2D
R401L	A-3D
R402L	B-4C
R403L	B-4D
R404L	B-4D
R405	B-3C
R408	A-3C
R410	B-3C
R415	A-3D
R417L	A-3C
R418L	A-3C
R419L	A-3C
R420	B-4C
R422	B-4C
R423	B-4C
R424	B-4C
R425	B-4C
R426	B-3C
R427	B-4C
R428	B-3C
R429L	B-3C
R435	B-3D
R436L	A-3D
R441	B-3C
R445	B-4E
R447	A-3C
R544	A-1E
R551	A-1F
R552	A-1F
R553	A-1F
R555	A-1F
R556	A-1F
R558	A-1F
R559	A-1F
R560	A-1F
R563	A-2F
R564	A-2F
R565	A-2F
R570	A-2F
R571	A-1E
R572	A-1E
R575	A-1F
R576	A-1F
R577	A-1F
R578	A-1F
R579	A-1F
R580	A-1F
R581	A-1F
R582	A-1F
R583	A-1F
R584	A-1F
R585	A-1F
R586	A-1E
R587	A-1E
R588	A-1E
R589	A-1E
R591	A-1E
R592	A-1E
R593	A-1E
R594	A-1E
R601	A-4F
R602	A-4F
R603	A-4F
R606	A-3F
R607	A-4F
R609	B-4F
R610	A-3F
R611	A-3F
R612	A-3F
R613	A-3F
R614	A-3F
R616	B-4E
R619	B-4E
R620	B-4F
R621	B-4F
R622	B-4F
R623	B-4F
R624	B-4F
R631	A-4C
R634	B-3B
R635	A-4C
R636	A-4B
R638	A-4C
R639	A-4B
R640	B-4B
R641	A-4B
R642	B-4B
R643	B-4B
R645	B-4B
R649	A-3B
R651	A-4B
R661	B-1F
R662	B-1F
R663	A-3F
R671	B-1C
R672	B-1C
R681	B-3E
R682	A-3E
R691	A-2F
R692	4-2F
R693	A-2F
R694	A-2F
R695	A-2F
R696	A-2F
R714	A-3F
R715	A-2F
R718	A-3E
R720	A-3E
R722	A-2F
R723	A-1E
R724	A-3D
R901	A-2E
R902	A-2F
R903	A-2F
R904	A-2F
R905	A-2F
R906	B-2F
R907	B-2F
R908	A-2F
R909	A-2F
R910	A-2F
R911	A-2F
R912	B-3F
R913	A-3F
R914	A-3F
R915	B-3F
R916	B-3F
R917	B-3F
R918	B-3F
R919	A-3F
R920	A-3F
R921	A-3F
R922	A-3F
R923	B-3F
R924	B-3F
R925	A-3F
R926	A-3F
R927	A-3F
R928	A-2F
R929	A-3E
R930	A-2F
R931	A-2F
R932	A-3F
R933	A-2F
R934	A-3F
R935	A-2F
R936	A-3F
R937	A-3F
R938	A-3F
R939	A-3F
R940	A-3F
R942	B-3E
R943	B-3E
R944	B-3E
R945	A-3E
R946	A-3E
R949	A-3F
R951	A-3F
R952	A-3F
R954	A-3G
R955	B-3F
R956	B-3F
R957	A-3G
R958	A-3G
R959	A-3F
R960	A-3G
R961	A-3G
R962	A-4G
R963	A-4G
R964	A-3G
R965	A-3G
R966	A-3G
R967	A-3G
R968	B-3F
R969	B-3F
R970	A-3F
R971	A-3G
R972	A-3G
R973	B-3F
R974	A-3G
R975	A-4G
R976	B-3E
R977	B-3E
R978	B-1G
R979	B-1G
R980	B-1G
R981	B-1F
R982	B-1F
R983	B-1F
R984	B-1F
R985	B-1F
R986	A-1G
R987	A-1F
R988	A-1G
R989	A-1G
R990	A-3F
R991	A-3F
R994	A-1F
R1102	A-1A
R1103	B-1A
R1104	A-1A
R1105	A-2A
R1106	A-1A
R1107	A-1A
R1108	A-1A
R1109	A-1B
R1110	A-1B
R1113	A-1B
R1114	A-2A
R1116	A-2A
R1117	A-2B
R1118	A-2B
R1119	A-2B
R1120	B-2A
R1121	B-2A
R1122	B-2A
R1123	B-2B
R1124	B-2B
R1125	B-2A
R1126	B-2A
R1130	A-2B
R1131	A-2B
R1132	A-1B
R1133	A-1B
R1134	A-1B
R1135	A-1B
R1136	B-2A
R1137	B-2A
R1138	B-2A
R1139	B-3B
R1140	B-3B
R1141	B-3B
R1142	B-3B
R1143	B-3B
R1144	B-2B
R1145	B-2A
R1146	A-2A
R1147	A-2A
R1148	B-3B
R1149	B-3B
R1150	B-2B
R1151	B-2B
R1152	A-2A
R1153	A-2B
R1158	B-2B
R1159	B-2B
R1162	B-3B
R1164	B-2B
R1170	A-2A
R1171	B-3B
R1172	A-1B
R1201	A-3A
R1202	A-3A
R1203	A-3A
R1204	B-2A
R1205	B-2A
R1206	B-2A
R1207	A-2A
R1208	A-2A
R1209	A-2A
R1212	A-2A
R1213	A-2A
R1214	A-2A
R1215	A-2A
R1217	A-3A
R1218	A-3A
R1219	A-2A
R1220	A-2A
R1221	A-2A
R1222	A-3A
R1223	A-3A
R1224	A-2A
R1225	A-3A
R1226	A-3A
R1230	A-3A
R1231	A-2A
R1232	A-2A
R1233	A-2A
R1234	B-2A
R1236	A-2A
R1237	B-2A
R1239	B-2A
R1301	A-3B
R1302	A-3B
R1303	A-3B
R1304	A-3B
R1306	B-3B
R1308	B-3A
R1309	B-3A
R1310	B-3A
R1313	B-3A
R1315	B-2A
R1316	B-2A
R1317	A-3A
R1322	A-3A
R1323	A-3A
R1330	B-2A
R1331	A-3A
R1332	A-3A
RT	
RT103	A-2C
RT203	A-2C
RT204	A-1D
RT205	A-1D
RT206	A-2D
RT207	A-2D
RT209	A-2D
RT210	A-2D
RT211	A-2D
RT212	A-2D
RT215	A-2D
RT216	A-2D
SW	
SW901	B-1G
T	
T551	B-1E
TL	
TL1139	A-1B
TL1301	B-3A
TL1302	B-3A
TL1303	B-3A
TL1304	B-3A
TL1305	B-3A
TL1306	B-3A
TL1307	B-3A
TL1308	B-3A
TL1309	B-3A
TL1311	B-3A
TL1312	B-3A
TL1313	B-3A
TL1314	B-3A
TL1318	A-3A
TP	
TP101	A-2B
TP102	A-2B
TP201	A-2C
TP202	A-2D
TP203	A-1C
TP204	A-1D
TP205	A-2C
TP206	A-2C
X	
X201	B-1C
X901	B-2E
X902	A-3F
X1101	B-2A

VCA[MAIN] – SIDE A – DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

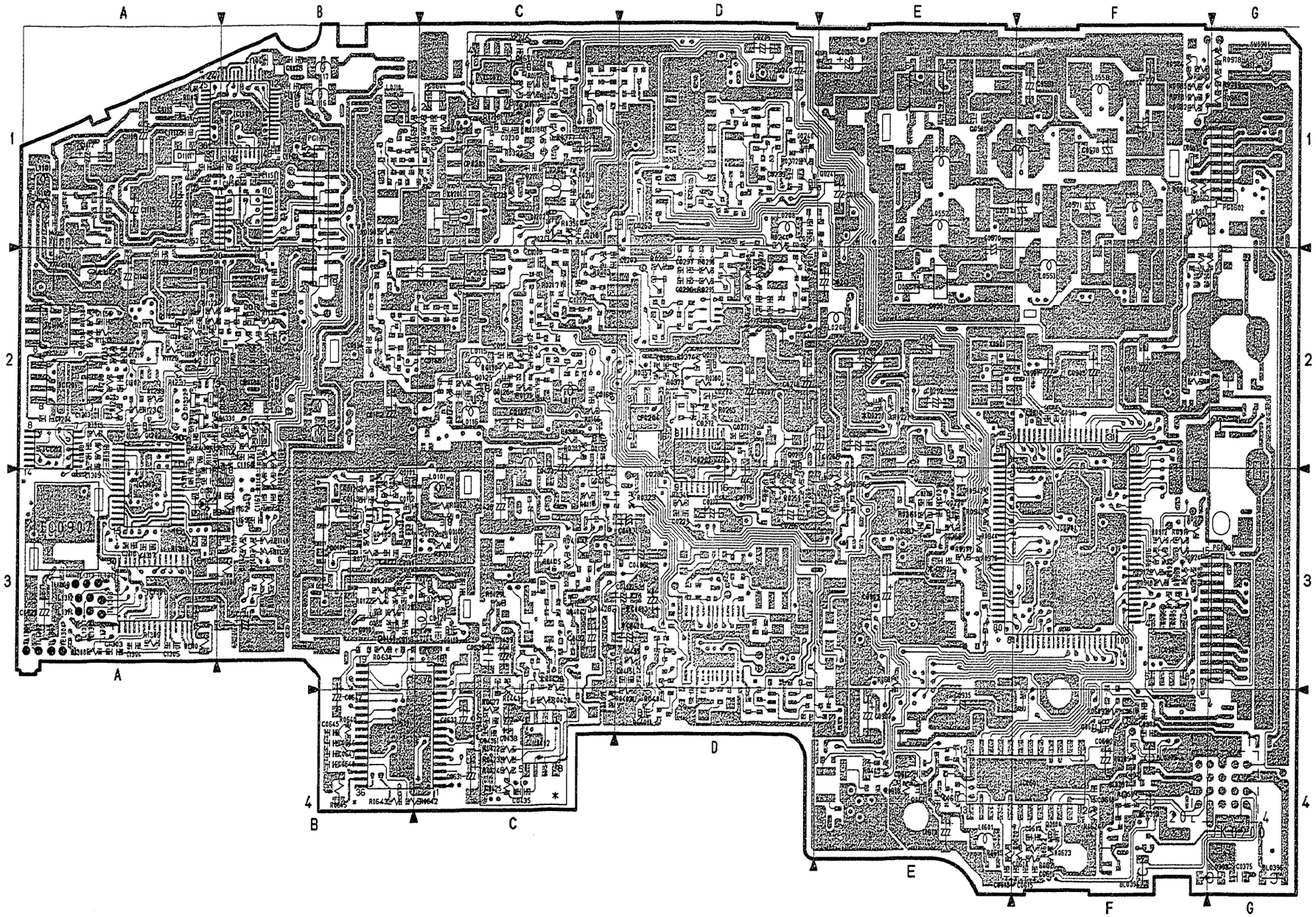
SYMBOL No.	TYPE110	TYPE310	TYPE410	TYPE510
C421	×	×	○	○
D1108	×	×	○	○
L903	○	×	○	×
PG903	4P	5P	4P	5P
Q261	×	○	×	○
Q1108	×	×	○	○
R222	JUMPER	×	JUMPER	×
R229	×	○	×	○
R254	×	○	×	○
R316	×	○	×	○
R320	×	○	×	○
R321	JUMPER	×	JUMPER	×
R363	JUMPER	×	JUMPER	×
R376	×	JUMPER	×	JUMPER
R381	×	○	×	○
R382	○	×	○	×
R394	×	○	×	○
R415	×	×	○	○
R723	×	JUMPER	×	JUMPER
R927	○	×	○	×
R928	×	JUMPER	×	JUMPER
R1160	×	×	○	○

VCA[MAIN] – SIDE B – DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

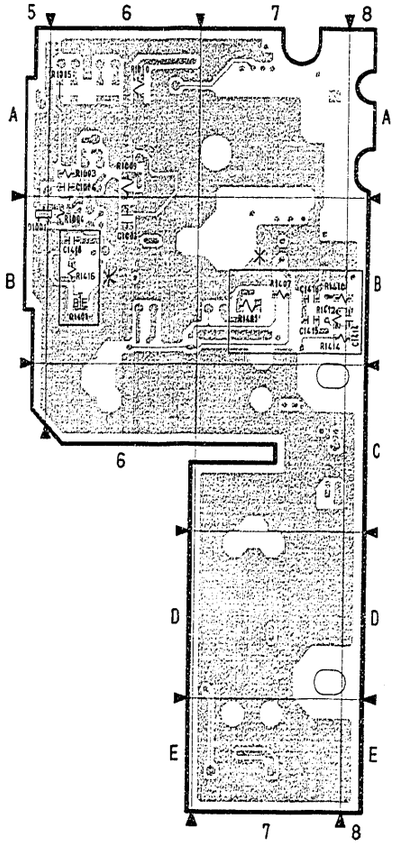
SYMBOL No.	TYPE110	TYPE310	TYPE410	TYPE510
C413	×	×	○	○
C420	×	×	○	○
C435	×	×	○	○
C436	×	×	○	○
C437	×	×	○	○
C438	×	×	○	○
C439	×	×	○	○
C921	○	×	○	×
C1164	×	×	○	○
C1165	×	×	○	○
IC402	×	×	○	○
Q270	×	○	×	○
R221	×	○	×	○
R422	×	×	○	○
R423	×	×	○	○
R424	×	×	○	○
R425	×	×	○	○
R426	×	×	○	○
R427	×	×	○	○
R441	×	×	○	○
R976	○	×	○	×
R1144	JUMPER	JUMPER	×	×
R1145	JUMPER	JUMPER	×	×
R1158	×	×	○	○
R1159	×	×	○	○

VCA CIRCUIT BOARD -SIDE B-
[PATTERN No. JA1125-7]

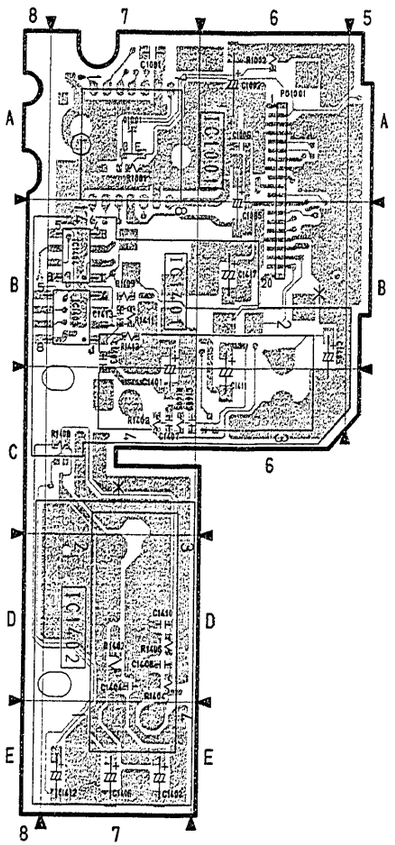


VCA(MAIN)-SIDE B-
[PATTERN No.JA1125-7]

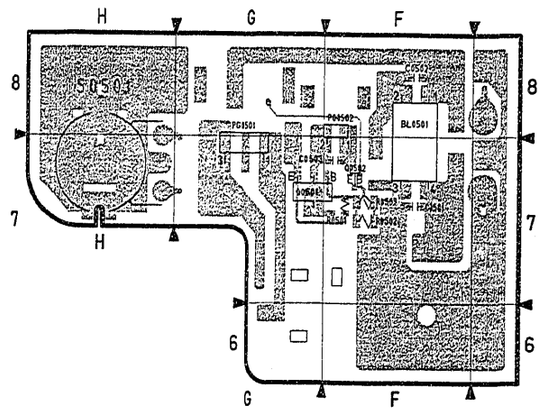
SPE. DCS CIRCUIT BOARDS [PATTERN No. JA1125-7]



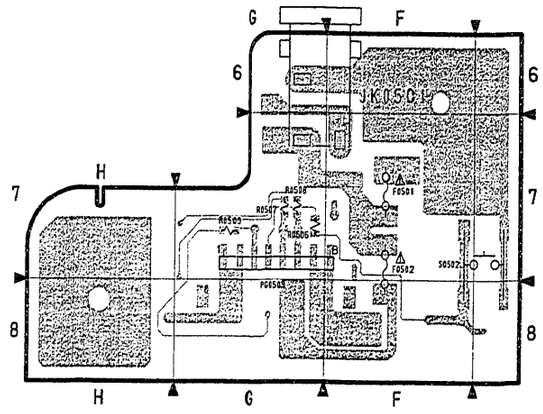
SPE(SENSOR/GYRO) -SIDE A-
[PATTERN No.JA1125-7]



SPE(SENSOR/GYRO) -SIDE B-



DCS(DC/SWITCH)-SIDE B-



DCS(DC/SWITCH)-SIDE A-
[PATTERN No.JA1125-7]

IDENTIFICATION OF PARTS LOCATION

DCS [DC/SWITCH]

Symbol No.	Parts Location
BL	
BL501	B-7F
C	
C501	B-7F
C502	B-8F
C503	B-7F
F	
F501	A-7F
F502	A-7F
JK	
JK501	A-6G
PG	
PG501	B-7G
PG502	B-8F
PG503	A-7G
Q	
Q501	B-7G
Q502	B-7F
R	
R501	B-7F
R502	B-7F
R503	B-7F
R506	A-7G
R507	A-7G
R508	A-7G
R509	A-7G
S	
S501	B-7H
S502	A-7E

SPE [SENSOR/GYRO]

Symbol No.	Parts Location
C	
C1001	B-7A
C1002	B-6A
C1003	A-6B
C1004	A-6A
C1005	B-6B
C1006	B-6A
C1401	B-7B
C1402	B-7E
C1403	B-7B
C1404	B-7D
C1405	B-6C
C1406	B-7E
C1407	B-7C
C1408	B-7D
C1409	B-7C
C1410	B-7D
C1411	B-6B
C1412	B-7E
C1413	B-7B
C1414	A-8B
C1415	A-7B
C1416	A-7B
C1417	B-6B
C1418	A-6B
D	
D1001	A-5B
IC	
IC1001	B-7A
IC1401	B-6C
IC1402	B-7D
IC1403	B-7B
IC1404	B-7B
PG	
PG1001	B-6A
Q	
Q1001	B-7A
Q1401	A-6B
R	
R1001	B-7A
R1002	B-6A
R1003	A-6A
R1004	A-6B
R1005	A-6A
R1009	A-6A
R1010	A-6A
R1401	A-7B
R1402	B-7D
R1403	B-7C
R1404	B-7D
R1405	B-7C
R1406	B-7D
R1407	A-7B
R1408	B-7C
R1409	B-7B
R1410	A-7B
R1411	B-7B

Symbol No.	Parts Location
R1412	A-7B
R1413	B-7B
R1414	A-7B
R1416	A-6B

SPE[SENSOR/GYRO] – SIDE A – DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

SYMBOL No.	TYPE110	TYPE310	TYPE410	TYPE510
C1414	×	×	○	○
C1415	×	×	○	○
C1416	×	×	○	○
C1418	×	×	○	○
Q1401	×	×	○	○
R1401	×	×	○	○
R1407	×	×	○	○
R1410	×	×	○	○
R1412	×	×	○	○
R1414	×	×	○	○
R1416	×	×	○	○

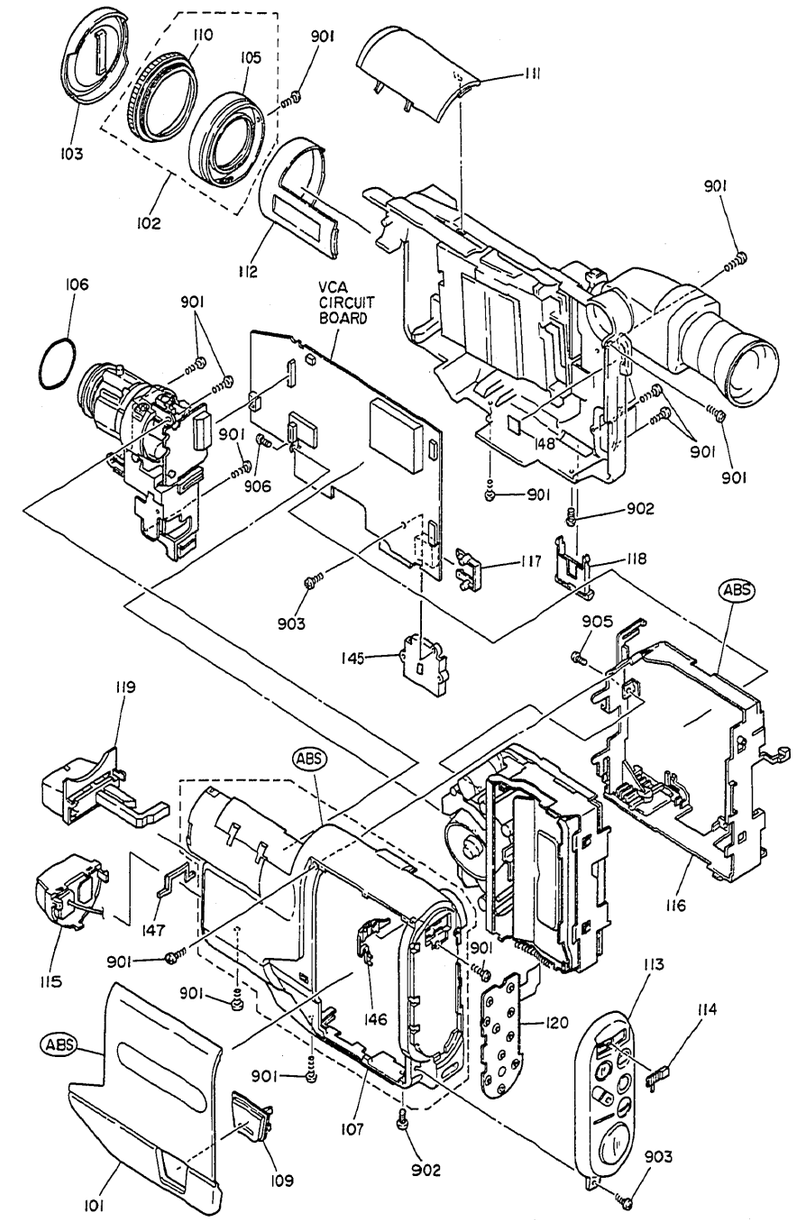
SPE[SENSOR/GYRO] – SIDE B – DIFFERENCE TABLE

NOTE: This table listes the different components marked with asterisks (*) in the circuit board diagrams.

SYMBOL No.	TYPE110	TYPE310	TYPE410	TYPE510
C1401	×	×	○	○
C1402	×	×	○	○
C1403	×	×	○	○
C1404	×	×	○	○
C1405	×	×	○	○
C1406	×	×	○	○
C1407	×	×	○	○
C1408	×	×	○	○
C1409	×	×	○	○
C1410	×	×	○	○
C1411	×	×	○	○
C1412	×	×	○	○
C1413	×	×	○	○
C1417	×	×	○	○
IC1401	×	×	○	○
IC1402	×	×	○	○
IC1403	×	×	○	○
IC1404	×	×	○	○
R1402	×	×	○	○
R1403	×	×	○	○
R1404	×	×	○	○
R1405	×	×	○	○
R1406	×	×	○	○
R1408	×	×	○	○
R1409	×	×	○	○
R1411	×	×	○	○
R1413	×	×	○	○

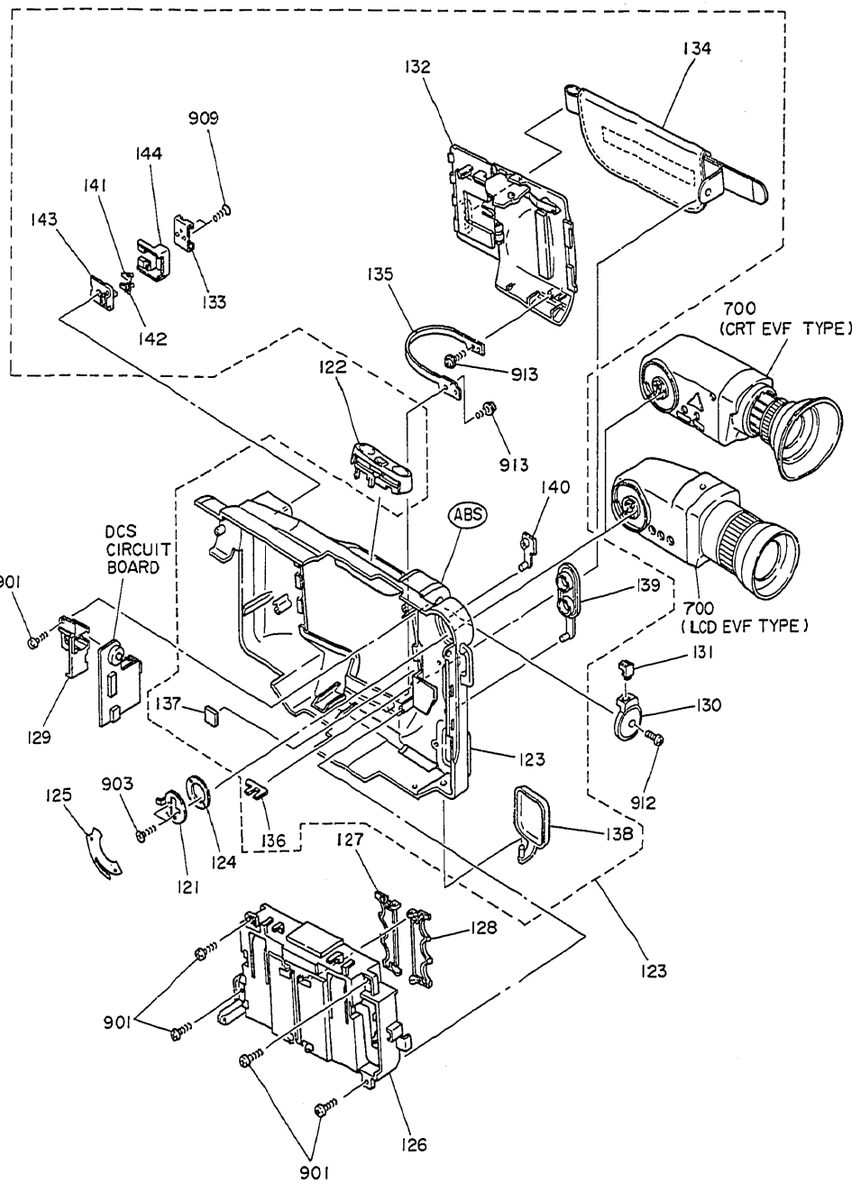
EXPLODED VIEWS

1. CABINET SECTION(1)



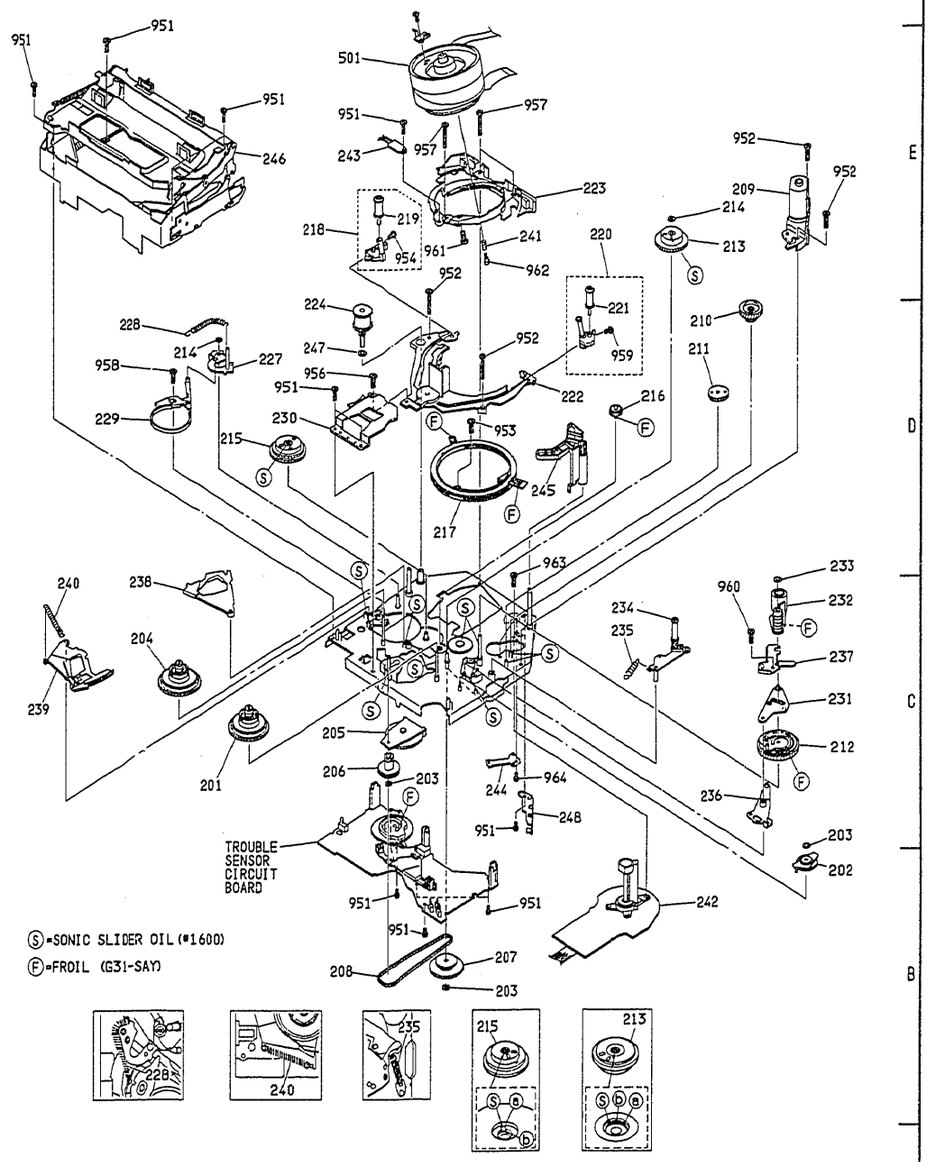
NOTE: THE SYNTHETIC RESIN MEMBERS THAT CAN BE DISMANTLED ARE SHOWN BY ABBREVIATIONS USING LETTERS.

2. CABINET SECTION(I)



NOTE:THE SYNTHETIC RESIN MEMBERS THAT CAN BE DISMANTLED ARE SHOWN BY ABBREVIATIONS USING LETTERS.

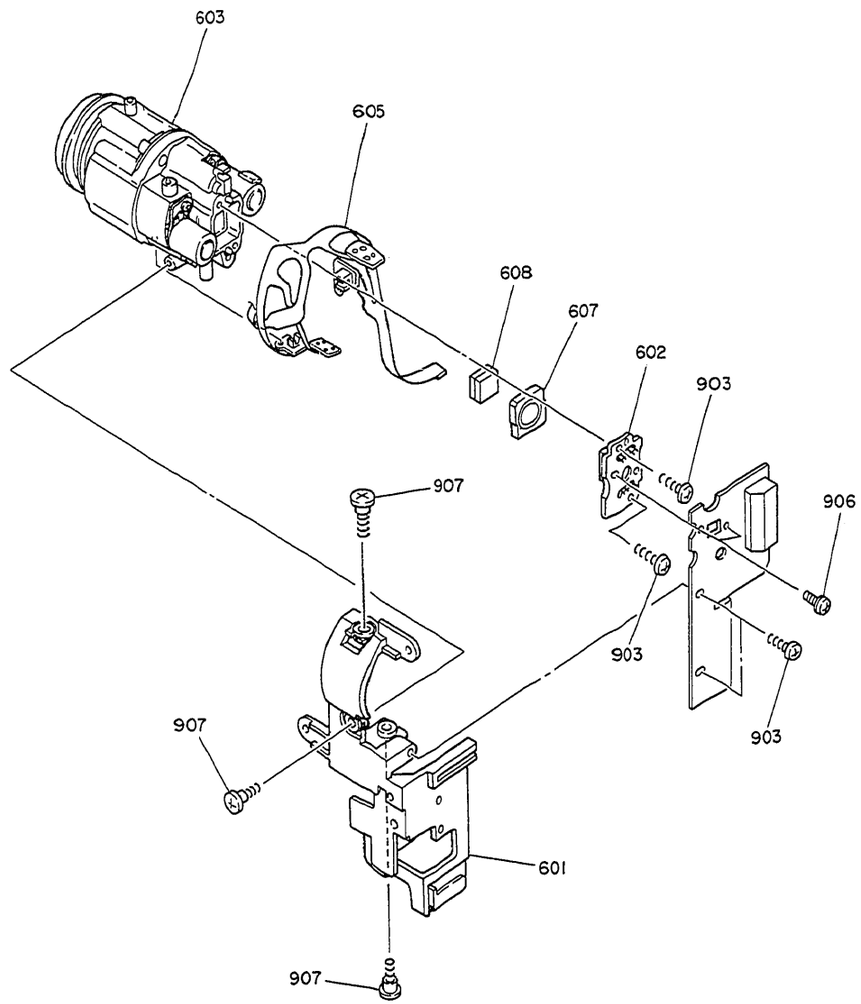
3. CHASSIS SECTION



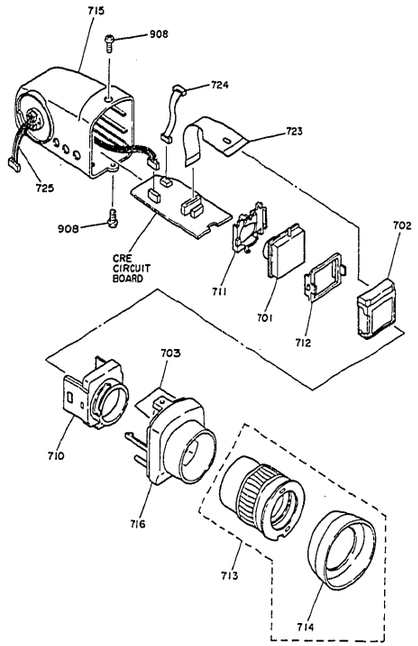
Ⓢ=SONIC SLIDER OIL (#1600)
Ⓕ=FROIL (G31-SAY)

NOTE: If you change the Loading Relay Gears, please use oiler to apply Sonic Slidas oil between ⓐ to ⓑ. If oil is not applied, Loading Relay Gears will be locked.

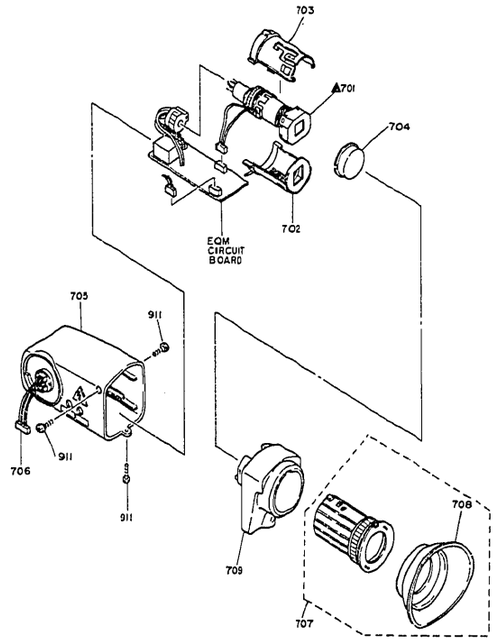
4. CAMERA BLOCK SECTION



5. ELECTRONIC VIEWFINDER(LCD EVF) SECTION



6. ELECTRONIC VIEWFINDER(CRT EVF) SECTION



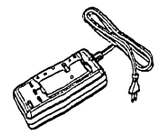
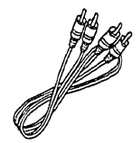
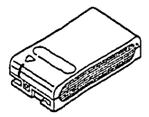
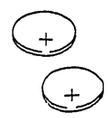
CHAPTER 7

REPLACEMENT PARTS LIST

1. MECHANICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		MECHANISM SECTION
101	QD11751	LID, CASSETTE[TYPE110]
101	QD11752	LID, CASSETTE[TYPE310]
101	QD11753	LID, CASSETTE[TYPE410]
101	QD11754	LID, CASSETTE[TYPE510]
102	QX10823	RING, LENS
103	4799701	CAP, FOOD
105	QX10833	RING, LENS
106	NX11241	RING
107	QD11841	CASE, SIDE(L)[TYPE110]
107	QD11842	CASE, SIDE(L)[TYPE510, 410, 310]
109	PC11052	BUTTON, LID
110	QX10177	HOOD, LENS
111	QD11731	COVER, TOP[TYPE510, 410, 310]
111	QD11732	COVER, TOP[TYPE110]
112	QD11722	COVER, LENS[TYPE110]
112	QD11723	COVER, LENS[TYPE510, 410, 310]
113	QD11861	COVER, SWITCH[TYPE510, 410]
113	QD11865	COVER, SWITCH[TYPE310, 110]
114	PC11061	KNOB, EJECT
115	GH10181	MICROPHONE
116	NT10281	FRAME, MECHANISM
117	NJ10411	HOLDER
118	QX10811	CASE, BATTERY
119	QD11701	WINDOW, IR
120	FH10191	SWITCH ASSY
121	4899872	SPRING
122	5604851	SWITCH, T/W
123	QD11627	CASE, SIDE(R)[TYPE310, 110]
123	UX10371	CASE, SIDE(R)[TYPE510, 410]
124	4826123	STOPPER
125	4345032	SHEET, EVF
126	QD11681	CASE, BATTERY
127	NJ10401	HOLDER, BATTERY(L)
128	NJ10471	HOLDER, BATTERY(R)
129	NJ10421	HOLDER, JACK
130	PC11081	BOTTON, POWER
131	4752651	KNOB, LOCK
132	QD11971	CAP, BATTERY
133	QX11041	SHOE
134	PV10171	STRAP, HAND
135	NX11531	HINGE
136	MN10831	SHEET
137	MU10651	CUSHION
138	QD11651	COVER, TERMINAL
139	QD11661	COVER, JACK
140	QD11641	COVER, DC
141	KL10491	TERMINAL(L)
142	KL10501	TERMINAL(R)
143	NJ10541	HOLDER, TERMINAL
144	QX11051	COVER, TERMINAL
145	NX11261	HOLDER, BATTERY
146	NJ10431	HOLDER, EJECT
147	MN11381	SPACER[TYPE310, 110]
148	MN11371	SPACER[TYPE510, 410]
201	6404062	REEL DISK, TAKE-UP
202	6406114	GEAR
203	7787733	WASHER
204	6404073	REEL DISK, SUPPLY
205	6401644	GEAR, IDLER
206	6406211	GEAR
207	6406034	GEAR, PULLEY
208	6358471	BELT
209	KX10622	LOADING MOTOR BLOCK
210	6376311	GEAR
211	6406082	GEAR
212	6406242	GEAR
213	6405833	GEAR
214	7787731	WASHER
215	6405823	GEAR
216	6406131	GEAR
217	4588464	RING, LOADING
218	4589356	BASE, GUIDE ROLLER(I)
219	KX10171	GUIDE ROLLER
220	4589367	BASE, GUIDE ROLLER(O)
221	KX11161	GUIDE ROLLER
222	4587796	PLATE
223	KX10532	BASE, CYLINDER[TYPE510, 410]
223	KX10533	BASE, CYLINDER[TYPE310, 110]
224	6406156	ROLLER, IMPEDANCE
227	4589011	ARM, TENSION
228	6554231	SPRING
229	4588553	BAND, TENSION
230	6408832	COVER, IDLER
231	NA10601	PLATE
232	4588294	ARM, PRESSURE ROLLER
233	7787571	WASHER
234	4588702	ARM
235	6554201	SPRING
236	KX10731	LEVER
237	4588532	SPRING
238	4588429	PLATE
239	4588353	BRAKE
240	6554221	SPRING
241	6554214	SPRING
242	GP10191	MOTOR, CAPSTAN
244	5794021	BRUSH
245	4588995	COVER
246	KX10761	CASSETTE HOLDER ASSY
247	7789314	WASHER
248	4827262	BRACKET
501	HX10251	CYLINDER ASSY (CY-53CN)
601	NT10301	FRAME, LENS
602	UE10891	CCD IMAGE SENSOR ASSY
603	KQ10431	LENS, ZOOM[TYPE510, 410]
603	KQ10432	LENS ZOOM ASSY[TYPE310, 110]
605	JD10221	FLEXIBLE CONNECTOR
607	NX11251	RUBBER
608	DT10141	CRYSTAL
700	UX10301	EVF ASSY[TYPE410, 110]
700	UX10321	EVF ASSY[TYPE510, 310]
△701	5319061	CRT[TYPE410, 110]
701	DT10121	BACK LIGHT[TYPE510, 310]
702	4715252	CASE, CRT[TYPE410, 110]
702	DB10161	LCD[TYPE510, 310]
703	4715241	CASE, CRT(B)[TYPE410, 110]
703	MN11221	SPACER[TYPE510, 310]
704	4592241	COVER[TYPE410, 110]
705	QD11821	CASE, EVF(F)[TYPE410, 110]
706	5844975	CONNECTOR[TYPE410, 110]
707	QD11791	LENS, EVF[TYPE410, 110]
708	4798483	CAP, EVF[TYPE410, 110]
709	QD11851	CASE, EVF(B)[TYPE410, 110]
710	QD10584	HOLDER, LCD[TYPE510, 310]
711	QD10573	HOLDER[TYPE510, 310]
712	QD10611	PIECE[TYPE510, 310]
713	4717041	LENS, EVF[TYPE510, 310]
714	4798771	CAP, EYE[TYPE510, 310]
715	QD11781	CASE, EVF[TYPE510, 310]
716	QD12171	CASE, EVF[TYPE510, 310]
723	JD10211	FLEXIBLE CONNECTOR[TYPE510, 310]
724	5846771	CONNECTOR[TYPE510, 310]
725	5844972	CONNECTOR[TYPE510, 310]
901	7775946	SCREW (2X6)
902	7775963	SCREW(2X3)
903	7775945	SCREW(2X5)
905	7773891	SCREW
906	8650103	SCREW(2X3)
907	MJ10221	SCREW
908	8700968	SCREW(1.7X3.0)[TYPE510, 310]
909	8639106	SCREW(2X6)
911	8619003	SCREW 1.7X5[TYPE410, 110]
912	8700970	SCREW(1.7X4.0)
913	MJ10311	SCREW (M2X4.5)
951	8712024	PAN HEAD SCREW-1.4MMDX3MM
952	8700272	SCREW(1.7X5)
953	7775921	SCREW(1.4X2)
954	8714004	SCREW(1.4X2.5)
956	8619065	SCREW(1.7X6)
957	8700976	SCREW(1.7X8.0)
958	7770791	SCREW
959	8712904	SCREW(1.4X2.0)
960	8619063	SCREW(1.7X3)
961	8711105	SCREW(2X5)[TYPE310, 110]
961	MJ10201	SCREW(2X5)[TYPE510, 410]
962	7785886	SCREW
963	8700264	1.7X2 SCREW
964	8741103	SCREW(2X3)
		ACCESSORIES
△802	HA10212	AC ADAPTOR (VM-AC84A)
803	EV10162	DC CORD
804	5856024	AUDIO/VIDEO CABLE[TYPE510, 410]
804	EW10381	CORD[TYPE310, 110]
805	5616582	REMOTE HAND SET(VM-RM70A)[TYPE510, 410]
805	HL10421	REMOTE HAND SET (VT-RME55A)[TYPE310]
806	4592071	HOLDER, REMOCON[TYPE310]
807	TS11791	SHOULDER STRAP[TYPE510, 410, 310]

ACCESSORIES

AC ADAPTER/CHARGER  (VM-AC84A)	DC CORD	AUDIO/VIDEO OUTPUT CABLE 	REMOTE CONTROLLER (VM-RM70A)
REMOTE CONTROLLER (VM-RME55A)	REMOTE CONTROLLER HOLDER	SHOULDER STRAP	△ 
△ 	WARNING : Keep this battery away from children. If swallowed, consult a physician immediately for emergency treatment.		

2. ELECTRICAL PARTS LIST

SYMBOL-NO	P-NO	DESCRIPTION
		CAMERA & VCR SECTION
C0101	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0102	0806174	ELECTROLYTIC 100UF 6.3V
C0103	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0104	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0107	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0108	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0110	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0111	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0112	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0113	0806011	ELECTROLYTIC 1.0UF 16V
C0118	0893121	CERAMIC CHIP 39PF+-5% 50V
C0119	0893119	CERAMIC CHIP 33PF+-5% 50V
C0120	0893122	CERAMIC CHIP 47PF+-5% 50V
C0121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0123	0893114	CERAMIC CHIP 12PF+-5% 50V
C0124	0893123	CERAMIC CHIP 56PF+-5% 50V
C0127	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0128	0893132	CERAMIC CHIP 270PF+-5% 50V
C0129	0893122	CERAMIC CHIP 47PF+-5% 50V
C0130	0893124	CHIP CERAMIC 68PF+-5% 50V
C0131	0893121	CERAMIC CHIP 39PF+-5% 50V
C0132	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0134	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0137	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0138	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0141	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0143	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0144	0893119	CERAMIC CHIP 33PF+-5% 50V
C0147	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0148	0806168	ELECTROLYTIC 47UF 6.3V
C0149	0893214	CERAMIC CHIP 2700PF+-10% 50V
C0150	0202158	CERAMIC CHIP 75PF+-5% 50V
C0151	0893121	CERAMIC CHIP 39PF+-5% 50V
C0153	0893132	CERAMIC CHIP 270PF+-5% 50V
C0157	0893123	CERAMIC CHIP 56PF+-5% 50V
C0158	0893126	CERAMIC CHIP 100PF+-5% 50V
C0162	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0163	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0166	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0167	0806168	ELECTROLYTIC 47UF 6.3V
C0168	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0169	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0177	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0202	0893119	CERAMIC CHIP 33PF+-5% 50V
C0203	0893102	CERAMIC CHIP 1.0PF+-0.25% 50V
C0204	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0205	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0206	0806024	ELECTROLYTIC 3.3UF 6.3V
C0207	0806174	ELECTROLYTIC 100UF 6.3V
C0208	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0209	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0213	0893127	CERAMIC CHIP 120PF+-5% 50V
C0214	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C0215	0202327	CERAMIC CHIP 0.22UF+-10% 16V
C0216	0893122	CERAMIC CHIP 47PF+-5% 50V
C0217	0806168	ELECTROLYTIC 47UF 6.3V
C0218	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0220	0893124	CHIP CERAMIC 68PF+-5% 50V
C0223	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0225	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0227	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0230	0893114	CERAMIC CHIP 12PF+-5% 50V
C0231	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0232	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0233	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0234	0806027	ELECTROLYTIC 4.7UF 4V
C0235	0806124	ELECTROLYTIC 10UF 4V
C0236	0806149	ELECTROLYTIC 4.7UF 25V
C0237	0893124	CHIP CERAMIC 68PF+-5% 50V
C0238	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0239	0806027	ELECTROLYTIC 4.7UF 4V
C0240	0806149	ELECTROLYTIC 4.7UF 25V
C0242	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0243	0806153	ELECTROLYTIC 10UF 16V
C0244	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0246	0893126	CERAMIC CHIP 100PF+-5% 50V
C0247	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0248	0806174	ELECTROLYTIC 100UF 6.3V
C0249	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0250	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0251	0893117	CERAMIC CHIP 22PF+-5% 50V
C0253	0893011	CERAMIC CHIP 0.15UF+-10% 16V
C0256	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0257	0893134	CERAMIC CHIP 390PF+-5% 50V
C0258	0893118	CERAMIC CHIP 27PF+-5% 50V
C0259	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0260	0893197	CERAMIC CHIP 0.022UF+-10% 25V
C0262	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0263	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0264	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0265	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0266	0806153	ELECTROLYTIC 10UF 16V
C0267	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0268	0806153	ELECTROLYTIC 10UF 16V
C0269	0893106	CERAMIC CHIP 4.0PF+-0.25% 50V
C0270	0893117	CERAMIC CHIP 22PF+-5% 50V
C0271	0893116	CERAMIC CHIP 18PF+-5% 50V
C0272	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0273	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0275	0806147	ELECTROLYTIC 3.3UF 35V
C0276	0893008	CERAMIC CHIP 1000PF+-10% 50V
C0277	0806153	ELECTROLYTIC 10UF 16V
C0278	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0279	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0280	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0281	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0282	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0283	0893125	CERAMIC CHIP 82PF+-5% 50V
C0285	0893124	CHIP CERAMIC 68PF+-5% 50V
C0287	0893131	CERAMIC CHIP 220PF+-5% 50V
C0288	0806153	ELECTROLYTIC 10UF 16V
C0289	0806178	ELECTROLYTIC 220UF 4V
C0292	0806146	ELECTROLYTIC 2.2UF 50V
C0293	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0296	0893127	CERAMIC CHIP 120PF+-5% 50V
C0297	0893109	CERAMIC CHIP 7.0PF 50V
C0299	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0373	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0375	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0376	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0381	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0390	0893004	CERAMIC CHIP 0.047UF+-10% 16V
C0391	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0394	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0395	0806168	ELECTROLYTIC 47UF 6.3V
C0399	0806153	ELECTROLYTIC 10UF 16V
C0401L	0202327	CERAMIC CHIP 0.22UF+-10% 16V

SYMBOL-NO	P-NO	DESCRIPTION
C0402L	0806004	ELECTROLYTIC 0.33UF 35V
C0403L	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0404L	0893213	CERAMIC CHIP 2200PF+-10% 50V
C0405L	0893211	CERAMIC CHIP 1500PF+-10% 50V
C0406L	0806162	ELECTROLYTIC 33UF 4V
C0407L	0806018	ELECTROLYTIC 2.2UF 6.3V
C0408L	0806027	ELECTROLYTIC 4.7UF 4V
C0409L	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0410L	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0411L	0202327	CERAMIC CHIP 0.22UF+-10% 16V
C0411R	0202327	CERAMIC CHIP 0.22UF+-10% 16V
C0412L	0806147	ELECTROLYTIC 3.3UF 35V
C0413	0806018	ELECTROLYTIC 2.2UF 6.3V[TYPE510,410]
C0415L	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0416	0806027	ELECTROLYTIC 4.7UF 4V
C0417L	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0418L	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0419L	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0420	0806146	ELECTROLYTIC 2.2UF 50V[TYPE510,410]
C0421	0893186	CERAMIC CHIP 0.033UF+-10% 16V[TYPE510,410]
C0422	0806153	ELECTROLYTIC 10UF 16V
C0423	0806153	ELECTROLYTIC 10UF 16V
C0424L	0202327	CERAMIC CHIP 0.22UF+-10% 16V
C0425	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0426	0806003	ELECTROLYTIC 0.22UF 35V
C0428	0806168	ELECTROLYTIC 47UF 6.3V
C0429L	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0430L	0893091	CERAMIC CHIP 0.022UF+-10% 16V
C0431L	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0432	0806146	ELECTROLYTIC 2.2UF 50V
C0435	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C0436	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C0437	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C0438	0806124	ELECTROLYTIC 10UF 4V[TYPE510,410]
C0439	0806023	ELECTROLYTIC 3.3UF 4V[TYPE510,410]
C0440	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0441L	0893058	CERAMIC CHIP 0.33UF+80-20% 16V
C0443	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0445	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0501	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0502	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0503	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0551	0893155	CERAMIC CHIP 33PF+-5% 50V
C0552	0893217	CERAMIC CHIP 4700PF+-10% 50V
C0553	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0554	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C0555	0209942	CERAMIC CHIP 100PF+-5% 50V
C0556	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0558	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0559	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C0560	0893202	CERAMIC CHIP 330PF+-10% 50V
C0561	0893165	CERAMIC CHIP 180PF+-5% 50V
C0562	0893203	CERAMIC CHIP 390PF+-10% 50V
C0563	0893158	CERAMIC CHIP 56PF+-5% 50V
C0564	0893202	CERAMIC CHIP 330PF+-10% 50V
C0565	0893155	CERAMIC CHIP 33PF+-5% 50V
C0567	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0570	0206671	ELECTROLYTIC 10UF 10V
C0571	0206671	ELECTROLYTIC 10UF 10V
C0573	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0574	0806157	ELECTROLYTIC 22UF 6.3V
C0577	0206671	ELECTROLYTIC 10UF 10V
C0578	0206671	ELECTROLYTIC 10UF 10V
C0579	0206671	ELECTROLYTIC 10UF 10V
C0581	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0582	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0585	AA00335R	CHIP CERAMIC 1.0UF+80-20% 25V
C0586	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0588	AA00335R	CHIP CERAMIC 1.0UF+80-20% 25V
C0589	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0590	0806157	ELECTROLYTIC 22UF 6.3V
C0591	0893062	CERAMIC CHIP 1UF+80-20% 16V
C0601	0893205	CERAMIC CHIP 560PF+-10% 50V
C0602	0806149	ELECTROLYTIC 4.7UF 25V
C0603	0893115	CERAMIC CHIP 15PF+-5% 50V
C0604	0893215	CERAMIC CHIP 330PF+-10% 50V
C0605	0893208	CERAMIC CHIP 1000PF+-10% 50V
C0606	0893204	CERAMIC CHIP 470PF+-10% 50V
C0607	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0608	0893204	CERAMIC CHIP 470PF+-10% 50V
C0609	0893184	CERAMIC CHIP 0.022UF+-10% 16V
C0610	0806153	ELECTROLYTIC 10UF 16V
C0611	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0612	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0613	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C0614	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0615	0893205	CERAMIC CHIP 560PF+-10% 50V
C0616	0893115	CERAMIC CHIP 15PF+-5% 50V
C0617	0893215	CERAMIC CHIP 330PF+-10% 50V
C0618	0893204	CERAMIC CHIP 470PF+-10% 50V
C0619	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0631	0806173	ELECTROLYTIC 100UF 4V
C0634	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0635	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0636	0893186	CERAMIC CHIP 0.033UF+-10% 16V
C0637	0806153	ELECTROLYTIC 10UF 16V
C0638	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0639	AA00354R	CERAMIC CHIP 0.47UF+-10% 16V
C0642	0806153	ELECTROLYTIC 10UF 16V
C0643	0893011	CERAMIC CHIP 0.15UF+-10% 16V
C0644	0202327	CERAMIC CHIP 0.22UF+-10% 16V
C0645	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0646	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0647	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0648	0893182	CERAMIC CHIP 0.015UF+-10% 16V
C0671	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0672	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C0691	0893206	CERAMIC CHIP 680PF+-10% 50V
C0692	0893202	CERAMIC CHIP 330PF+-10% 50V
C0693	0893199	CERAMIC CHIP 220PF+-10% 50V
C0694	0893206	CERAMIC CHIP 680PF+-10% 50V
C0695	0893204	CERAMIC CHIP 470PF+-10% 50V
C0696	0893202	CERAMIC CHIP 330PF+-10% 50V
C0901	0806168	ELECTROLYTIC 47UF 6.3V
C0902	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0903	0806168	ELECTROLYTIC 47UF 6.3V
C0905	0806168	ELECTROLYTIC 47UF 6.3V
C0906	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C0907	0806175	ELECTROLYTIC 100UF 10V
C0908	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C0909	0806174	ELECTROLYTIC 100UF 6.3V
C0910	0893115	CERAMIC CHIP 15PF+-5% 50V
C0911	0893115	CERAMIC CHIP 15PF+-5% 50V
C0912	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0913	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0914	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0915	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0916	0893118	CERAMIC CHIP 27PF+-5% 50V
C0917	0893118	CERAMIC CHIP 27PF+-5% 50V
C0918	0202328	CERAMIC CHIP 1.0UF+80-20% 16V

SYMBOL-NO	P-NO	DESCRIPTION
C0919	0893119	CERAMIC CHIP 33PF+-5% 50V
C0920	0893126	CERAMIC CHIP 100PF+-5% 50V
C0921	0893131	CERAMIC CHIP 220PF+-5% 50V[TYPE410,110]
C0922	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0923	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0924	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0925	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0926	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0927	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0928	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0929	0806168	ELECTROLYTIC 47UF 6.3V
C0930	0806174	ELECTROLYTIC 100UF 6.3V
C0931	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0933	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0934	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0935	0806169	ELECTROLYTIC 47UF 16V
C0936	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0938	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C0940	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1001	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1002	0806169	ELECTROLYTIC 47UF 16V
C1003	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C1004	0893234	CERAMIC CHIP 1500PF+80-20% 50V
C1005	0806163	ELECTROLYTIC 33UF 10V
C1006	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1101	0893117	CERAMIC CHIP 22PF+-5% 50V
C1102	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1103	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1104	0806018	ELECTROLYTIC 2.2UF 6.3V
C1106	0893227	CERAMIC CHIP 0.22UF+80-20% 16V
C1107	0806168	ELECTROLYTIC 47UF 6.3V
C1108	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1109	0806169	ELECTROLYTIC 47UF 16V
C1110	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C1111	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1112	0806168	ELECTROLYTIC 47UF 6.3V
C1113	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1114	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1115	0806157	ELECTROLYTIC 22UF 6.3V
C1116	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1117	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1118	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1119	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1120	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1122	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1124	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1125	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1126	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1127	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1128	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1129	0893014	CERAMIC CHIP 0.01UF+-10% 25V
C1130	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1131	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1133	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1134	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1135	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1136	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1137	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1138	0893117	CERAMIC CHIP 22PF+-5% 50V
C1139	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1141	0806169	ELECTROLYTIC 47UF 16V
C1142	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1143	0806168	ELECTROLYTIC 47UF 6.3V
C1144	0202319	CERAMIC CHIP 22PF+-2% 50V
C1145	0893124	CHIP CERAMIC 68PF+-5% 50V
C1146	0893125	CERAMIC CHIP 82PF+-5% 50V
C1147	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1148	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1149	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1150	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1151	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1152	0202328	CERAMIC CHIP 1.0UF+80-20% 16V
C1153	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1154	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1155	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1156	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1158	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1159	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1160	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1161	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1162	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1163	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1164	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C1165	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C1166	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1167	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1168	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1169	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1170	0893239	CERAMIC CHIP 0.01UF+80-20% 50V
C1172	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C1173	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1174	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1201	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1202	0893201	CERAMIC CHIP 270PF 50V
C1203	0893013	CERAMIC CHIP 0.22UF+-10% 16V
C1204	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1205	0893007	CERAMIC CHIP 0.082UF+-10% 16V
C1207	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1208	0893202	CERAMIC CHIP 330PF+-10% 50V
C1210	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1211	0893113	CERAMIC CHIP 10PF+-0.5% 50V
C1212	0893133	CERAMIC CHIP 330PF+-5% 50V
C1216	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1217	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1219	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1301	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1302	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1303	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1304	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1305	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1306	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1307	0893215	CERAMIC CHIP 3300PF+-10% 50V
C1308	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1309	0893217	CERAMIC CHIP 4700PF+-10% 50V
C1310	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1311	0806169	ELECTROLYTIC 47UF 16V
C1312	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1313	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1316	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C1317	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1318	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1319	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1320	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C1401	0806157	ELECTROLYTIC 22UF 6.3V[TYPE510,410]
C1402	0806157	ELECTROLYTIC 22UF 6.3V[TYPE510,410]
C1403	0893225	CERAMIC CHIP 0.1UF+80-20% 16V[TYPE510,410]
C1404	0893225	CERAMIC CHIP 0.1UF+80-20% 16V[TYPE510,410]
C1405	0806167	ELECTROLYTIC 47UF 4V[TYPE510,410]
C1406	0806167	ELECTROLYTIC 47UF 4V[TYPE510,410]

SYMBOL-NO	P-NO	DESCRIPTION
C1407	0893209	CERAMIC CHIP 1200PF 50V[TYPE510,410]
C1408	0893209	CERAMIC CHIP 1200PF 50V[TYPE510,410]
C1409	0893209	CERAMIC CHIP 1200PF 50V[TYPE510,410]
C1410	0893209	CERAMIC CHIP 1200PF 50V[TYPE510,410]
C1411	0206647	ELECTROLYTIC 10UF 10V[TYPE510,410]
C1412	0206647	ELECTROLYTIC 10UF 10V[TYPE510,410]
C1413	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C1414	0893193	CERAMIC CHIP 0.01UF+-10% 25V[TYPE510,410]
C1415	0893225	CERAMIC CHIP 0.1UF+80-20% 16V[TYPE510,410]
C1416	0893225	CERAMIC CHIP 0.1UF+80-20% 16V[TYPE510,410]
C1417	0806157	ELECTROLYTIC 22UF 6.3V[TYPE510,410]
C1418	0893225	CERAMIC CHIP 0.1UF+80-20% 16V[TYPE510,410]
R0010	0103930	CHIP RESISTOR 390OHM+-5% 1/8W
R0011	0103838	RESISTOR CHIP 390OHM+-5% 0.1W
R0101	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0102	0790007	CHIP RESISTOR 5.6 OHM+-5% 1/16W
R0103	0790007	CHIP RESISTOR 5.6 OHM+-5% 1/16W
R0104	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0106	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0107	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0108	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0109	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0110	0790076	CHIP RESISTOR 820KOHM+-5% 1/16W
R0111	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0112	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0117	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0119	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0120	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0121	0790008	CHIP RESISTOR 6.8 OHM+-5% 1/16W
R0122	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0123	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0124	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0125	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0126	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0130	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0131	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R0132	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0133	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0138	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0140	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0141	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0142	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0143	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0146	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R0147	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R0148	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0149	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0150	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0153	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0157	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0158	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0161	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R0162	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0165	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0166	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0169	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0170	0790027	CHIP RESISTOR 180OHM+-5% 1/16W
R0171	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0172	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0174	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0175	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0176	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0177	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0184	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W
R0189	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0190	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R0191	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0194	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0198	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0199	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0203	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0205	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0206	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0207	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0208	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0212	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0213	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0215	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0216	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0217	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0218	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0219	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0221	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W[TYPE510,310]
R0223	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0224	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0227	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0228	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0229	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W[TYPE510,310]
R0234	0790002	CHIP RESISTOR 2.2 OHM+-5% 1/16W
R0239	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R0240	0105702	CHIP RESISTOR 16KOHM+-5% 1/16W
R0241	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R0244	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0246	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0250	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0253	0790026	CHIP RESISTOR 150 OHM+-5% 1/16W[TYPE510,310]
R0253	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W[TYPE410,110]
R0254	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W[TYPE510,310]
R0255	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0256	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0257	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R0258	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0259	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0260	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0261	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0263	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0264	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0265	0790035	CHIP RESISTOR 680 OHM+-5% 1/16W
R0269	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R0270	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R0273	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0274	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0275	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0276	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0278	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0279	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0280	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0282	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0286	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0287	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R0288	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0289	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0291	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0295	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0296	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0298	0790045	CHIP RESISTOR 3.9KOHM+-5% 1/16W
R0316	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W[TYPE510,310]
R0320	0104533	CHIP RESISTOR 1.5KOHM+-1% 1/16W[TYPE510,310]
R0322	0103851	CHIP RESISTOR 4.7KOHM+-5% 0.1W
R0323	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0341	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0344	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0351	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0352	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0356	0790069	CHIP RESISTOR 0.27MOHM+-5% 1/16W
R0357	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0358	0104093	CHIP RESSISTOR 75 OHM+-5% 1/16W
R0365	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R0366	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R0372	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0373	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0374	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R0377	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0378	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0379	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0381	0104553	CHIP RESISTOR 15KOHM+-1% 1/16W[TYPE510,310]
R0382	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W[TYPE410,110]
R0383	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0385	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0387	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0388	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0391	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0394	0104515	CHIP RESISTOR 2KOHM+-1% 1/16W[TYPE510,310]
R0398	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0401L	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0402L	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0403L	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0404L	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0405	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0408	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0410	0104121	CHIP RESISTOR 27KOHM+-1% 1/10W
R0415	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W[TYPE510,410]
R0417L	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0418L	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0419L	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R0420	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R0422	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W[TYPE510,410]
R0423	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W[TYPE510,410]
R0424	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W[TYPE510,410]
R0425	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W[TYPE510,410]
R0426	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W[TYPE510,410]
R0427	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W[TYPE510,410]
R0428	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0429L	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0435	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0436L	0790066	CHIP RESISTOR 150KOHM+-5% 1/16W
R0441	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W[TYPE510,410]
R0445	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0447	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R0501	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0502	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0503	0103835	CHIP RESISTOR 220 OHM+-5% 0.1W
R0506	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0507	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0508	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0509	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0544	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0551	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0552	0790074	CHIP RESISTOR 560KOHM+-5% 1/16W
R0553	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0555	0790074	CHIP RESISTOR 560KOHM+-5% 1/16W
R0556	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0558	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R0559	0104121	CHIP RESISTOR 27KOHM+-1% 1/10W
R0560	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0563	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R0564	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0565	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0570	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0571	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0572	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0575	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R0576	0104303	CHIP RESISTOR 12KOHM+-0.5% 1/16W
R0577	0104301	CHIP RESISTOR 4.7KOHM+-0.5% 1/16W
R0578	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0579	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0580	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0581	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0582	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0583	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0584	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0585	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0586	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0587	0104115	CHIP RESISTOR 3.9KOHM 1/10W
R0588	0104302	CHIP RESISTOR 5.6KOHM+-0.5% 1/16W
R0589	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0591	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R0592	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0593	0104294	CHIP RESISTOR 47KOHM+-0.5% 1/16W
R0594	0104301	CHIP RESISTOR 4.7KOHM+-0.5% 1/16W
R0601	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0602	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0603	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0606	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0607	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0609	0105706	CHIP RESISTOR 24KOHM+-5% 1/16W
R0610	0105691	CHIP RESISTOR 24KOHM+-1% 1/16W
R0611	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0612	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R0613	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0614	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0616	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0619	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0620	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0621	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0622	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R0623	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0624	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0631	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R0632	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0634	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0635	0790072	CHIP RESISTOR 390KOHM+-5% 1/16W
R0636	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0638	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0639	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0640	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R0641	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0642	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0643	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R0645	0105815	CHIP RESISTOR 0.47 OHM+-10% 1/4W
R0649	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0661	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0662	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0663	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0671	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0672	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0681	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0682	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0691	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0692	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R0693	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0694	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0695	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0696	0790062	CHIP RESISTOR 68KOHM+-5% 1/16W
R0714	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0715	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0718	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0720	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0722	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0724	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0901	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0902	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0903	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R0904	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0905	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0906	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0907	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0908	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0909	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0910	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0911	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0912	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0913	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0914	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0915	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0916	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0917	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0918	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0919	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0920	0790075	CHIP RESISTOR 680KOHM+-5% 1/16W
R0921	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0922	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0923	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0924	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0925	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0926	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R0927	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W[TYPE410,110]
R0929	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0930	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0931	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0932	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0933	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0934	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0935	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0936	0104563	CHIP RESISTOR 47KOHM+-1% 1/16W
R0937	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R0938	0104542	CHIP RESISTOR 10KOHM+-1% 1/16W
R0939	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0940	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0942	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0943	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0944	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0945	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0946	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0949	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0951	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0952	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0954	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0955	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0956	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R0957	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0958	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0959	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0960	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0961	0790073	CHIP RESISTOR 470KOHM+-5% 1/16W
R0962	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R0963	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0964	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R0965	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0966	0104563	CHIP RESISTOR 47KOHM+-1% 1/16W
R0967	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0968	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R0969	0104503	CHIP RESISTOR 27KOHM+-1% 1/16W
R0970	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R0971	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R0972	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R0973	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0974	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0975	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R0976	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W[TYPE410,110]
R0977	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R0978	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0979	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0980	0790036	CHIP RESISTOR 820 OHM+-5% 1/16W
R0981	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R0982	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R0983	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R0984	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R0985	0790044	CHIP RESISTOR 3.3KOHM+-5% 1/16W
R0986	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R0987	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R0988	0790063	CHIP RESISTOR 82KOHM+-5% 1/16W
R0989	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0990	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R0991	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R0994	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R1001	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1002	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1003	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1004	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1009	0103823	CHIP RESISTOR 220HM+-5% 0.1W
R1010	5172541	FILTER
R1102	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R1103	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1104	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1105	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1106	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1107	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1108	0790028	CHIP RESISTOR 220 OHM+-5% 1/16W
R1109	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R1110	0790025	CHIP RESISTOR 120 OHM+-5% 1/16W
R1113	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1114	0104537	CHIP RESISTOR 3.6KOHM+-1% 1/16W
R1116	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R1117	0790042	CHIP RESISTOR 2.2KOHM+-5% 1/16W
R1118	0790043	CHIP RESISTOR 2.7KOHM+-5% 1/16W
R1119	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1120	0104545	CHIP RESISTOR 1.24KOHM+-1% 1/16W
R1121	0104558	CHIP RESISTOR 5.6KOHM+-1% 1/16W
R1122	0104562	CHIP RESISTOR 39KOHM+-1% 1/16W
R1123	0104554	CHIP RESISTOR 1KOHM+-1% 1/16W
R1124	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1125	0104571	CHIP RESISTOR 3.9KOHM+-1% 1/16W
R1126	0104573	CHIP RESISTOR 1.2KOHM+-1% 1/16W
R1130	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1131	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R1132	0105681	CHIP RESISTOR 2.7KOHM+-1% 1/16W
R1133	0104552	CHIP RESISTOR 6.8KOHM+-1% 1/16W
R1134	0104502	CHIP RESISTOR 820 OHM+-1% 1/16W
R1135	0104553	CHIP RESISTOR 15KOHM+-1% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R1136	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1137	0790041	CHIP RESISTOR 1.8KOHM+-5% 1/16W
R1138	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1139	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1140	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1141	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R1142	0790034	CHIP RESISTOR 560 OHM+-5% 1/16W
R1143	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1146	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1147	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1148	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1149	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R1150	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1151	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R1152	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1153	0790048	CHIP RESISTOR 6.8KOHM+-5% 1/16W
R1158	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W[TYPE510,410]
R1159	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W[TYPE510,410]
R1160	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W[TYPE510,410]
R1162	0103841	CHIP RESISTOR 680 OHM+-5% 0.1W
R1164	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R1170	0103823	CHIP RESISTOR 22OHM+-5% 0.1W
R1171	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R1172	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R1201	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1202	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R1203	0790039	CHIP RESISTOR 1.5KOHM+-5% 1/16W
R1204	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1205	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1206	0790069	CHIP RESISTOR 0.27MOHM+-5% 1/16W
R1207	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1208	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R1209	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1213	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1214	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R1215	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1217	0790052	CHIP RESISTOR 12KOHM+-5% 1/16W
R1218	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1219	0790053	CHIP RESISTOR 15KOHM+-5% 1/16W
R1220	0790071	CHIP RESISTOR 330KOHM+-5% 1/16W
R1221	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R1222	0790071	CHIP RESISTOR 330KOHM+-5% 1/16W
R1223	0790068	CHIP RESISTOR 220KOHM+-5% 1/16W
R1224	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1225	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1226	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1230	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1231	0104552	CHIP RESISTOR 6.8KOHM+-1% 1/16W
R1232	0104558	CHIP RESISTOR 5.6KOHM+-1% 1/16W
R1233	0104504	CHIP RESISTOR 56K OHM 1/16W
R1234	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R1236	0790031	CHIP RESISTOR 330 OHM+-5% 1/16W
R1237	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1239	0790056	CHIP RESISTOR 27KOHM+-5% 1/16W
R1301	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R1302	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R1303	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R1304	0790032	CHIP RESISTOR 390 OHM+-5% 1/16W
R1306	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R1308	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1309	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1310	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R1313	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R1315	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R1316	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R1317	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R1322	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1323	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R1330	0104518	CHIP RESISTOR 2.87KOHM+-1% 1/16W
R1331	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1332	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R1401	0103821	CHIP RESISTOR 15 OHM+-5% 0.1W[TYPE510,410]
R1402	0103821	CHIP RESISTOR 15 OHM+-5% 0.1W[TYPE510,410]
R1403	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W[TYPE510,410]
R1404	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W[TYPE510,410]
R1405	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W[TYPE510,410]
R1406	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W[TYPE510,410]
R1407	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W[TYPE510,410]
R1408	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W[TYPE510,410]
R1409	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W[TYPE510,410]
R1410	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W[TYPE510,410]
R1411	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W[TYPE510,410]
R1412	0790067	CHIP RESISTOR 180KOHM+-5% 1/16W[TYPE510,410]
R1413	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W[TYPE510,410]
R1414	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W[TYPE510,410]
R1416	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W[TYPE510,410]
RT0103	5040202	SEMI VARIABLE 2.2KOHM
RT0203	5040204	VARIABLE RESISTOR 10KOHM
RT0204	5040204	VARIABLE RESISTOR 10KOHM
RT0205	5040203	VARIABLE RESISTOR 4.7KOHM
RT0206	5040203	VARIABLE RESISTOR 4.7KOHM
RT0207	5040204	VARIABLE RESISTOR 10KOHM
RT0209	5040204	VARIABLE RESISTOR 10KOHM
RT0210	5040201	VARIABLE RESISTOR 470 OHM
RT0211	5040203	VARIABLE RESISTOR 4.7KOHM
RT0212	5040202	SEMI VARIABLE 2.2KOHM
RT0215	5040204	VARIABLE RESISTOR 10KOHM
RT0216	5040205	VARIABLE RESISTOR 4.7KOHM
D0001	5382221	LED PLT-462T3
D0205	5337422	DIODE DA221
D0401	5337354	DIODE MA133
D0551	5337371	DIODE SB07-03C
D0552	5337351	DIODE MA132WK
D0553	5337351	DIODE MA132WK
D0554	5337352	DIODE MA132WA
D0661	5337422	DIODE DA221
D0901	5337351	DIODE MA132WK
D0902	5337351	DIODE MA132WK
D1001	5337351	DIODE MA132WK
D1101	5337371	DIODE SB07-03C
D1102	5337351	DIODE MA132WK
D1103	5337352	DIODE MA132WA
D1104	5382911	DIODE LT1D82A
D1105	5337351	DIODE MA132WK
D1107	5337352	DIODE MA132WA
D1108	5337351	DIODE MA132WK[TYPE510,410]
D1301	5337422	DIODE DA221
D1302	5337422	DIODE DA221
D1303	5337422	DIODE DA221
IC0101	1366631	IC HA118189MP
IC0201	1366901	IC HA118372
IC0202	CK12041R	IC CXL5516N
IC0203	1352331	IC CXL5507M
IC0204	1351492	IC MM1029AF
IC0401	CK12231	IC HA118193F
IC0402	1352611	IC XRA15218[TYPE510,410]
IC0551	1366251	IC TL1464IPT
IC0601	CK12151R	IC UPC5023GS-079-E1
IC0631	1366391	IC LB1885MA
IC0671	1366651	IC BA6417F

SYMBOL-NO	P-NO	DESCRIPTION
IC0901	CK12172U	IC CXP87240AQ-012Q
IC0902	1352582	IC S-84206F
IC0903	1366081	IC HD74HCT125T
IC0904	1366612	IC XLU5949AFS
IC0905	1352385	IC NJM2903M
IC0907	5317391	LED MODULE
IC1001	UE10891	CCD IMAGE SENSOR ASSY
IC1101	1366681	IC HA118184F
IC1102	1365392	IC HD49319AF
IC1103	CK12131U	IC HG51CS035TE
IC1104	CK12061R	IC UPD16510GR
IC1105	5363182	IC MPC358G
IC1106	CK12261U	IC HD6433042T01F
IC1107	1366951	IC S-2939GIF10G-TF
IC1201	1365192	IC NJM3414AM
IC1202	1352651	IC NJM3403AV
IC1203	1350792	IC TC4S66F
IC1301	1366802	IC MPC17A85ZVMEL
IC1302	1366802	IC MPC17A85ZVMEL
IC1303	CK12091R	IC HD74HCT244T
IC1401	FU10171	GYRO SENSOR ENC-05EA-02[TYPE510,410]
IC1402	FU10172	GYRO SENSOR ENC-05EB-02[TYPE510,410]
IC1403	CK11721R	IC NJU7032M[TYPE510,410]
IC1404	1359931	IC TC4W66F[TYPE510,410]
Q0001	1322341	TRANSISTOR PT4810F
Q0002	5327521	PHOTO TRANSISTOR SPI-315-C
Q0003	5327521	PHOTO TRANSISTOR SPI-315-C
Q0004	1322341	TRANSISTOR PT4810F
Q0101	5326471	TRANSISTOR 2SB1218 (R)
Q0102	1323231	TRANSISTOR 2SB1462
Q0103	1323181	TRANSISTOR XP4213
Q0106	1323301	TRANSISTOR 2SB1219
Q0109	5326471	TRANSISTOR 2SB1218 (R)
Q0110	1323171	TRANSISTOR UN9213
Q0111	1323321	TRANSISTOR 2SD2216
Q0114	1323321	TRANSISTOR 2SD2216
Q0116	1323321	TRANSISTOR 2SD2216
Q0117	1323231	TRANSISTOR 2SB1462
Q0125	1323321	TRANSISTOR 2SD2216
Q0126	1323321	TRANSISTOR 2SD2216
Q0133	1323321	TRANSISTOR 2SD2216
Q0135	5326471	TRANSISTOR 2SB1218 (R)
Q0141	1323231	TRANSISTOR 2SB1462
Q0142	1323231	TRANSISTOR 2SB1462
Q0143	1323321	TRANSISTOR 2SD2216
Q0144	1323231	TRANSISTOR 2SB1462
Q0202	1323321	TRANSISTOR 2SD2216
Q0203	1323173	TRANSISTOR UN9212
Q0208	1323171	TRANSISTOR UN9213
Q0213	1323301	TRANSISTOR 2SB1219
Q0215	1323231	TRANSISTOR 2SB1462
Q0216	1323231	TRANSISTOR 2SB1462
Q0217	1323231	TRANSISTOR 2SB1462
Q0218	1323321	TRANSISTOR 2SD2216
Q0219	1323231	TRANSISTOR 2SB1462
Q0220	1323171	TRANSISTOR UN9213
Q0237	1323171	TRANSISTOR UN9213
Q0240	1323231	TRANSISTOR 2SB1462
Q0241	1323171	TRANSISTOR UN9213
Q0250	1323231	TRANSISTOR 2SB1462
Q0261	1323361	TRANSISTOR XP1501[TYPE510,310]
Q0268	1323361	TRANSISTOR XP1501
Q0270	1323231	TRANSISTOR 2SB1462[TYPE510,310]
Q0401L	1323321	TRANSISTOR 2SD2216
Q0403L	1323321	TRANSISTOR 2SD2216

SYMBOL-NO	P-NO	DESCRIPTION
Q0404	1323321	TRANSISTOR 2SD2216
Q0501	5326513	TRANSISTOR 2SB1188 (R)
Q0502	1323171	TRANSISTOR UN9213
Q0551	CA10271R	TRANSISTOR 2SB1424
Q0552	1308011	TRANSISTOR MPL1
Q0553	1308011	TRANSISTOR MPL1
Q0554	5326502	TRANSISTOR 2SD1766 (R)
Q0555	1323231	TRANSISTOR 2SB1462
Q0556	CA10271R	TRANSISTOR 2SB1424
Q0557	1323321	TRANSISTOR 2SD2216
Q0601	1323321	TRANSISTOR 2SD2216
Q0602	1323321	TRANSISTOR 2SD2216
Q0604	1323321	TRANSISTOR 2SD2216
Q0631	1323171	TRANSISTOR UN9213
Q0901	1323231	TRANSISTOR 2SB1462
Q0902	1323171	TRANSISTOR UN9213
Q0903	1323081	TRANSISTOR 2SA1036K
Q0904	1323231	TRANSISTOR 2SB1462
Q0905	1323321	TRANSISTOR 2SD2216
Q0906	1323171	TRANSISTOR UN9213
Q0907	1323172	TRANSISTOR UN9113
Q0908	1323171	TRANSISTOR UN9213
Q1001	5328221	TRANSISTOR 2SC2620-QC
Q1101	1323231	TRANSISTOR 2SB1462
Q1103	5328192	TRANSISTOR 2SC2462LD
Q1104	1323231	TRANSISTOR 2SB1462
Q1105	1323231	TRANSISTOR 2SB1462
Q1106	1323081	TRANSISTOR 2SA1036K
Q1107	1323141	TRANSISTOR 2SC2411K
Q1108	CA10451R	TRANSISTOR UMC4[TYPE510,410]
Q1109	1323171	TRANSISTOR UN9213
Q1110	1323341	TRANSISTOR 2SC4691
Q1201	1323253	TRANSISTOR XP4401
Q1202	1323321	TRANSISTOR 2SD2216
Q1203	1323171	TRANSISTOR UN9213
Q1401	1323171	TRANSISTOR UN9213[TYPE510,410]
△QF1301	FM10112R	FUSE 0.2A
△T0551	5148333	TRANSFORMAR, POWER
L0101	0773094	CHOKE COIL 100UH+-10%
L0104	0773124	CHOKE COIL 27UH+-5%
L0105	0773094	CHOKE COIL 100UH+-10%
L0106	0773111	CHOKE COIL 2.7 UH
L0108	0773136	CHOKE COIL 220UH+-5%
L0109	0773134	CHOKE COIL 150UH+-5%
L0110	0773116	CHOKE COIL 6.8UH+-10%
L0111	0773097	CHOKE COIL 330UH+-10%
L0113	5129255	COIL 470UH
L0114	0773134	CHOKE COIL 150UH+-5%
L0115	0773136	CHOKE COIL 220UH+-5%
L0116	0773135	CHOKE COIL 180UH+-5%
L0117	0773111	CHOKE COIL 2.7 UH
L0120	0773118	CHOKE COIL 10UH+-5%
L0125	0773092	CHOKE COIL 47UH+-10%
L0204	0773118	CHOKE COIL 10UH+-5%
L0206	0773088	CHOKE COIL 15UH
L0208	0773133	CHOKE COIL 120UH+-5%
L0209	0773091	CHOKE COIL 33UH
L0210	0773129	CHOKE COIL 68UH+-5%
L0211	0773091	CHOKE COIL 33UH
L0401	0773092	CHOKE COIL 47UH+-10%
L0552	BA10127R	COIL 10UH
L0553	BA10128R	COIL 22UH
L0554	BA10127R	COIL 10UH
L0555	0773087	CHOKE COIL 10UH+-10%
L0556	BA10127R	COIL 10UH

SYMBOL-NO	P-NO	DESCRIPTION
L0557	BA10129R	COIL 47UH
L0558	BA10129R	COIL 47UH
L0561	0773094	CHOKE COIL 100UH+-10%
L0562	0773094	CHOKE COIL 100UH+-10%
L0601	0773087	CHOKE COIL 10UH+-10%
L0901	0773094	CHOKE COIL 100UH+-10%
L0902	0773121	CHOKE COIL 15UH+-5%
L0903	0773088	CHOKE COIL 15UH[TYPE410,110]
L1101	0773087	CHOKE COIL 10UH+-10%
L1102	0773087	CHOKE COIL 10UH+-10%
L1103	0773087	CHOKE COIL 10UH+-10%
L1106	0773094	CHOKE COIL 100UH+-10%
L1107	0773087	CHOKE COIL 10UH+-10%
L1109	0773087	CHOKE COIL 10UH+-10%
L1110	0773087	CHOKE COIL 10UH+-10%
L1116	5172403	FILTER
L1117	5172403	FILTER
L1301	0773087	CHOKE COIL 10UH+-10%
L1302	0773087	CHOKE COIL 10UH+-10%
X0201	1930211	CRYSTAL
X0901	1930171	CRYSTAL
X0902	1930031	CRYSTAL
X1101	1930094	CRYSTAL
BL0394	5172545	LC FILTER
BL0395	5172545	LC FILTER
BL0396	5172545	LC FILTER
BL0397	5172541	FILTER
BL0398	5172542	FILTER
BL0399	5172545	LC FILTER
BL0501	BV10201R	CHOKE COIL
CN0502	5847081	CONNECTOR
CN0503	5845861	CONNECTOR
CN0901	1880355	CONNECTOR
CP0202	BE10231R	LC FILTER
CP0203	5172772	FILTER, BAND PASS
CP0204	5172624	FILTER, BAND PASS
CP1101	BE10112R	FILTER, LOW PASS
△F0501	5723232	FUSE
△F0502	5723231	FUSE 1.6A
JK0200	5695291	SOCKT
JK0201	ES10242	JACK, AV
JK0501	5693601	JACK
PG0001	5666921	MINI PLUG
PG0101	5668975	PLUG
PG0401L	5668671	MINI PLUG
PG0501	1830322	PLUG
PG0502	5668671	MINI PLUG
PG0503	5668675	PLUG
PG0551	5669037	MINI PLUG
PG0601	5692362	MINI PLUG
PG0602	5666929	PLUG
PG0603	5668753	MINI PLUG
PG0604	5668671	MINI PLUG
PG0901	5662766	PLUG
PG0902	5668752	MINI PLUG
PG0903	5669193	MINI PLUG[TYPE410,110]
PG0903	5669194	PLUG[TYPE510,310]
PG1001	1830344	PLUG
PG1101	1830343	PLUG
PG1102	1830351	PLUG
PG1301	EA10407R	CONNECTOR
S0003	5636171	SWITCH
S0004	5636171	SWITCH
S0005	5636171	SWITCH
S0006	5635331	SWITCH

SYMBOL-NO	P-NO	DESCRIPTION
S0007	5613523	SWITCH
S0501	FD10201	SWITCH
S0502	FE10151	SWITCH
SW0901	1742012	SWITCH
		B/W EVF[EMQ]SECTION[TYPE410,110]
C2001	0806169	ELECTROLYTIC 47UF 16V
C2002	0806169	ELECTROLYTIC 47UF 16V
C2003	0806146	ELECTROLYTIC 2.2UF 50V
C2004	0268437	POLYPROPYLENE 4700PF+-5%50V
C2005	0256871	ELECTROLYTIC 47UF 25V
C2006	0249655	CERAMIC CHIP 1000PF+-10% 1000V
C2007	0249656	CERAMIC CHIP 1000PF+-10% 500V
C2008	0806146	ELECTROLYTIC 2.2UF 50V
C2009	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2011	0209852	CERAMIC CHIP 180PF+-5% 50V
C2012	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2013	0893086	CERAMIC CHIP 0.1UF+80-20% 50V
C2014	0268521	MYLAR 0.1UF+-10% 50V
C2015	0202151	CERAMIC CHIP 2200PF+-5% 50V
C2016	0893044	CERAMIC CHIP 0.01UF+-10% 50V
C2017	0806145	ELECTROLYTIC 1UF 50V
C2018	0893062	CERAMIC CHIP 1UF+80-20% 16V
R2001	0103852	CHIP RESISTOR 5.6KOHM+-5% 0.1W
R2002	0103869	CHIP RESISTOR 150KOHM+-5% 0.1W
R2003	0103876	CHIP RESISTOR 560KOHM+-5% 0.1W
R2004	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2005	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2006	0103819	CHIP RESISTOR 10 OHM+-5% 0.1W
R2007	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2008	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2009	0103847	CHIP RESISTOR 2.2KOHM+-5% 0.1W
R2011	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R2012	0103857	CHIP RESISTOR 15KOHM+-5% 0.1W
R2013	0103845	CHIP RESISTOR 1.5KOHM+-5% 0.1W
R2014	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R2015	0103862	CHIP RESISTOR 39KOHM+-5% 0.1W
R2016	0103814	CHIP RESISTOR 3.9 OHM+-10% 0.1W
R2017	0103846	CHIP RESISTOR 1.8KOHM+-5% 0.1W
R2018	0103863	CHIP RESISTOR 47KOHM+-5% 0.1W
R2019	0103848	CHIP RESISTOR 2.7KOHM+-5% 0.1W
R2020	0103867	CHIP RESISTOR 100KOHM+-5% 0.1W
R2021	0103855	CHIP RESISTOR 10KOHM+-5% 0.1W
R2022	0103831	CHIP RESISTOR 100 OHM+-5% 0.1W
R2024	0103879	CHIP RESISTOR 1MOHM+-5% 0.1W
R2025	0103874	CHIP RESISTOR 390KOHM+-5% 0.1W
R2026	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
R2027	0103843	CHIP RESISTOR 1KOHM+-5% 0.1W
RT2001	5035204	SEMI VARIABLE 2.2MOHM
RT2002	5030251	SEMI VARIABLE 1MOHM
RT2003	5040103	SEMI VARIABLE 470 OHM
D2001	5337133	DIODE MA141K
D2002	5337321	DIODE MA199
IC2001	1365881	IC HA118179F
Q2001	5323831	TRANSISTOR 2SD974
Q2002	5326682	TRANSISTOR XN1B301
△T2001	5240566	TRANSFORMER
L2001	0773003	COIL 47UH
L2002	5244017	COIL
△CS2001	5887003	SOCKET, CRT
PG2001	5669631	CONNECTOR
PG2002	5668469	PLUG
		COLOR EVF[CRE]SECTION[TYPE510,310]

SYMBOL-NO	P-NO	DESCRIPTION
C2102	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2104	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2105	0893191	CERAMIC CHIP 6800PF+-10% 25V
C2106	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2108	0806153	ELECTROLYTIC 10UF 16V
C2110	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2113	0893188	CERAMIC CHIP 0.047UF+-10% 16V
C2114	0893242	CERAMIC CHIP 0.022UF+80-20% 50V
C2119	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2120	0893059	CERAMIC CHIP 0.47UF+80-20% 16V
C2121	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2122	0893231	CERAMIC CHIP 0.068UF+80-20% 25V
C2123	0893231	CERAMIC CHIP 0.068UF+80-20% 25V
C2124	0893231	CERAMIC CHIP 0.068UF+80-20% 25V
C2136	0893062	CERAMIC CHIP 1UF+80-20% 16V
C2137	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2138	0893193	CERAMIC CHIP 0.01UF+-10% 25V
C2141	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2181	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C2182	0806158	ELECTROLYTIC 22UF 16V
C2183	0806169	ELECTROLYTIC 47UF 16V
C2184	0806149	ELECTROLYTIC 4.7UF 25V
C2185	0893008	CERAMIC CHIP 0.1UF +-10% 16V
C2187	0806153	ELECTROLYTIC 10UF 16V
C2203	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2204	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
C2205	0893175	CERAMIC CHIP 1000PF+-5% 50V
C2207	0893175	CERAMIC CHIP 1000PF+-5% 50V
C2211	0206673	ELECTROLYTIC 33UF 6.3V
C2212	0893225	CERAMIC CHIP 0.1UF+80-20% 16V
C2213	0893175	CERAMIC CHIP 1000PF+-5% 50V
C2214	0893127	CERAMIC CHIP 120PF+-5% 50V
C2215	0893217	CERAMIC CHIP 4700PF+-10% 50V
C2216	0806019	ELECTROLYTIC 2.2UF 10V
C2217	0202025	CERAMIC DISC 4700PF+-5% 50V
C2218	0806149	ELECTROLYTIC 4.7UF 25V
C2219	0893154	CERAMIC CHIP 27PF+-5% 50V
C2220	0893154	CERAMIC CHIP 27PF+-5% 50V
C2221	0893154	CERAMIC CHIP 27PF+-5% 50V
C2222	0893154	CERAMIC CHIP 27PF+-5% 50V
C2223	0893154	CERAMIC CHIP 27PF+-5% 50V
C2224	0893154	CERAMIC CHIP 27PF+-5% 50V
C2225	0893154	CERAMIC CHIP 27PF+-5% 50V
C2226	0893154	CERAMIC CHIP 27PF+-5% 50V
C2227	0893232	CERAMIC CHIP 0.1UF+80-20% 25V
R2101	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R2102	0790061	CHIP RESISTOR 56KOHM+-5% 1/16W
R2103	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2104	0105203	CHIP RESISTOR 18KOHM+-0.5% 1/16W
R2105	0790077	CHIP RESISTOR 1MOHM+-5% 1/16W
R2106	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R2107	0790065	CHIP RESISTOR 120KOHM+-5% 1/16W
R2108	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2109	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R2110	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R2111	0790054	CHIP RESISTOR 18KOHM+-5% 1/16W
R2112	0790057	CHIP RESISTOR 33KOHM+-5% 1/16W
R2113	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R2115	0105708	CHIP RESISTOR 5.1MOHM+-5% 1/16W
R2118	0790047	CHIP RESISTOR 5.6KOHM+-5% 1/16W
R2119	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2120	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R2121	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W
R2122	0790024	CHIP RESISTOR 100 OHM+-5% 1/16W

SYMBOL-NO	P-NO	DESCRIPTION
R2125	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R2126	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R2128	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R2129	0790059	CHIP RESISTOR 47KOHM+-5% 1/16W
R2139	0790029	CHIP RESISTOR 270 OHM+-5% 1/16W
R2140	0790049	CHIP RESISTOR 8.2KOHM+-5% 1/16W
R2142	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R2143	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R2148	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2151	0790071	CHIP RESISTOR 330KOHM+-5% 1/16W
R2153	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2154	0790055	CHIP RESISTOR 22KOHM+-5% 1/16W
R2181	0105593	CHIP RESISTOR 680 OHM+-5% 1/2W
R2182	0790058	CHIP RESISTOR 39KOHM+-5% 1/16W
R2184	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R2202	0105697	CHIP RESISTOR 390KOHM+-1% 1/16W
R2203	0105197	CHIP RESISTOR 22KOHM+-0.5% 1/16W
R2204	0105202	CHIP RESISTOR 39KOHM+-0.5% 1/16W
R2207	0104514	CHIP RESISTOR 1.96KOHM+-1% 1/16W
R2208	0790033	CHIP RESISTOR 470 OHM+-5% 1/16W
R2209	0790046	CHIP RESISTOR 4.7KOHM+-5% 1/16W
R2210	0790038	CHIP RESISTOR 1.2KOHM+-5% 1/16W
R2211	0790064	CHIP RESISTOR 100KOHM+-5% 1/16W
R2212	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R2213	0790051	CHIP RESISTOR 10KOHM+-5% 1/16W
R2215	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2216	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
R2217	0790037	CHIP RESISTOR 1KOHM+-5% 1/16W
RT2101	AW10168	TIMMER RESISTOR
RT2102	AW10168	TIMMER RESISTOR
RT2103	AW10168	TIMMER RESISTOR
RT2104	5040107	SEMI VARIABLE 10KOHM
RT2105	5040106	SEMI VARIABLE 4.7KOHM
RT2106	5040106	SEMI VARIABLE 4.7KOHM
RT2181	5040106	SEMI VARIABLE 4.7KOHM
RT2201	5040108	SEMI VARIABLE
D2101	5337354	DIODE MA133
D2102	5337354	DIODE MA133
D2103	5337354	DIODE MA133
D2201	5337031	DIODE 1SV201
D2202	5337353	DIODE MA132K
IC2101	CK10521U	IC 1R3Y18
IC2181	CK11961R	IC NJM431U
IC2202	1366341	IC ETM3030TOA
L2181	0773094	CHOKE COIL 100UH+-10%
L2182	0773094	CHOKE COIL 100UH+-10%
L2203	BA10131R	COIL 220UH
L2204	0773121	CHOKE COIL 15UH+-5%
X2101	BL10111R	CRYSTAL
CP2101	5172474	TRAP, COIL
PG2102	1830022	PLUG
PG2104	1830022	PLUG
PG2201	EA10348R	CONNECTOR
PG2203	1830191	PLUG
		AC ADAPTOR[TYPE410,310,110]
D 1	5336552	DIODE S1WBA60
D 2	4113091	DIODE AU01A
D 51	TC10201	DIODE F5KQ60
D 52	5328321	DIODE MA151K (MH)
D 54	5328321	DIODE MA151K (MH)
D 55	5328321	DIODE MA151K (MH)
D 56	4113052	DIODE.SEC1401C
D 57	4113051	LED

SYMBOL-NO	P-NO	DESCRIPTION	SYMBOL-NO	P-NO	DESCRIPTION
D 58	4113053	DIODE SEC1801C			
D 59	5328381	DIODE MA153			
IC 1	4112011	IC M51996FP			
IC 2	TC10502	IC PS2501L1-2			
IC 51	4113081	IC UPC5023			
IC 52	TC10521	IC M34225M1-518SP			
ICP 51	5721946	IC PROTECTOR (N15)			
Q 1	TC10172	TRANSISTOR FS3TM16			
Q 51	5327031	TRANSISTOR 2SA673(C)			
Q 52	5327031	TRANSISTOR 2SA673(C)			
Q 53	1321211	TRANSISTOR 2SB1151			
Q 54	5328962	TRANSISTOR 2SA1037K			
Q 56	5328972	TRANSISTOR 2SC2412K-BRT			
Q 57	TC10541	TRANSISTOR 2SA885-S			
Q 58	5328972	TRANSISTOR 2SC2412K-BRT			
ZD 1	4112606	DIODE HZS3.3NB2			
ZD 2	4112601	DIODE HZS3.3NB2			
ZD 51	4112602	DIODE HZS4.3NB2			
ZD 52	4112604	DIODE HZS7.5NB3			
ZD 53	5337249	DIODE MA3043			
CX 51	4112083	CRYSTAL			
F 1	4115891	FUSE			

CHAPTER 8

Self-Diagnosic Functions

1. OVERVIEW

The camera/recoder has the following self-diagnostic functions.

* Occasional defect self-diagnostic function (A mode)
* Mechanical block self-diagnostic function (B mode)

Fig. 1-1 shows the self-diagnostic coverage range. The self-diagnostic functions of the camera/recoder are engaged by the system control μP (IC0901) which detects, memorizes and displays data related to defects in the mechanical block control system.

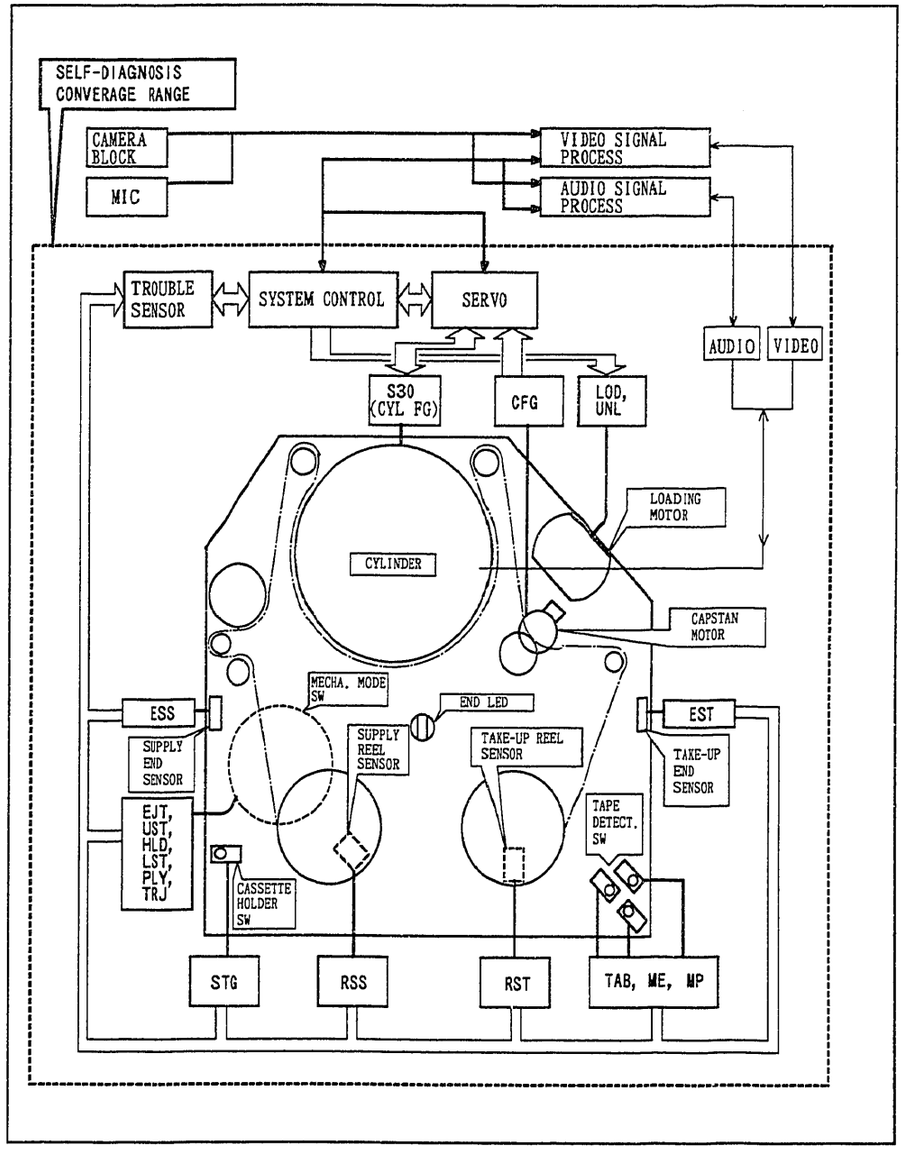


Fig.1-1 Self- Diagnostic Coverage Range

2. DETAILS OF DISPLAY/DETECTION AND APPLICATIONS

Table 2-1 summarizes the details of display/detection of the self-diagnostic functions and their applications.
Fig. 2-1 shows the operational processes of the self-diagnostic functions.

Table 2-1 Details of Display/Detection of Self-Diagnostic Functions and their Applications

	Occasional defect self-diagnostic function (A mode)	Mechanical block self-diagnostic function (B mode)
Details of display/ detection	The system control μP memorizes and displays the defect data. (If several defects have occurred, only the last defect detected is memorized.)	Displays the data for the defect that has occurred when the B mode is set.
Application	Used when the defective symptom is not reproduced during servicing.	Used to detect the cause of the defect (in the mechanical block or electrical circuits) and to determine the defective position of the mechanical block.
Detected parts	Trouble sensors ·Take-up end sensor (EST) ·Supply end sensor (ESS) ·Take-up reel sensor (RST) ·Supply reel sensor (RSS) Cylinder (S30) Capstan motor (CFG)	Trouble sensors ·Take-up end sensor (EST) ·Supply end sensor (ESS) ·Take-up reel sensor (RST) ·Supply reel sensor (RSS) Cylinder (S30) Capstan motor (CFG) Loading motor (LOD, UNL) Mechanism mode switch (EJT, UST, HLD, PLY, LST, TRJ) Tape detection switches, etc. ·Erase prevention tab detection switch (TAB) ·ME/MP detection switch (ME) ·Hi-8 MP detection switch (MP) ·Cassette holder switch (STG)
Cautions	* When the fast forward or rewind mode is entered, the defect data is erased.	Engage the B mode after completing the A mode. If the B mode is engaged first, the defect data may be erased.

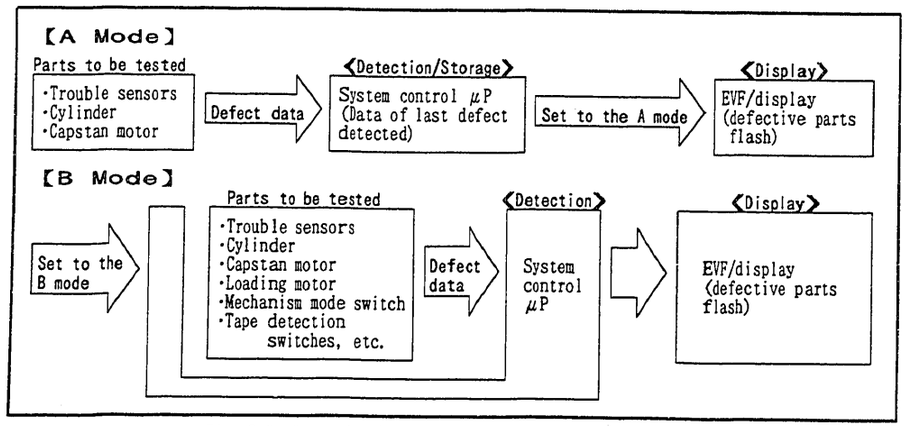


Fig. 2-1 Operation Processes of Self-Diagnostic Functions

3. SETTING PROCEDURE AND DETAILS OF DIAGNOSIS

3.1 Occasional Defect Self-Diagnostic Function (A Mode)

(1) Setting Procedure

1) Connect (attach) a power supply (battery).
↓
2) Set the power switch to "CAMERA" or "VIDEO".
↓
3) Press the DATE button.
↓
[Within half a second]
↓
4) Press the DATE and REW buttons simultaneously and hold them for 3-5 seconds.
↓

```
E1 <V1.05>94/12/19 22:11
   LOD      EJT      UNL
   RSS      UST      RST
   ESS      HLD      EST
   CFG      LST      S30
□□ TAB      PLY      STG
   ME       TRJ      MP
        0123456789ABCDEF
0000 H:0000000002001000
     L:1101111801100BD00
NTSC/PAL WYCC0AD AUDD140
```

《Results of self-diagnosis》
* The shaded items flash if they are defective.
* See Table 3-1 for the results of diagnosis.

Cautions:
* Do not press any buttons other than those specified during self-diagnosis; otherwise, it may cause a malfunction.
* Only the shaded items are tested in the A mode. Other items are ignored.

[To release]
* Set the power switch to "OFF".
* Press the DATE and REW buttons simultaneously.

(2) Results of diagnosis

Table 3-1 summarizes the results of diagnosis and the circuits/parts deemed to be defective in the A mode.

Table 3-1 Details of A Mode Self-Diagnosis

Part	Display	Results of diagnosis	Parts/circuits deemed to be defective
Trouble sensors	RSS	The pulse from the supply reel sensor is defective.	* Supply reel disk * Trouble sensor (reel sensor) * IC0901
	RST	The pulse from the take-up reel sensor is defective.	* Take-up reel disk * Trouble sensor (reel sensor) * IC0901
	ESS	The pulse from the supply end sensor is defective.	* Trouble sensors (end sensor/end LED) * Q0905 * IC0901 * DC-DC converter circuit (B+ line)
	EST	The pulse from the take-up end sensor is defective.	* Trouble sensors (end sensor/end LED) * Q0905 * IC0901 * DC-DC converter circuit (B+ line)
Cylinder	S30	The SW30 (CYL. FG) pulse is defective.	* Cylinder * IC0631 * IC0901 * DC-DC converter circuit
Capstan motor	CFG	The CAPST. FG pulse is defective.	* Capstan motor * IC0631 * IC0901 * DC-DC converter circuit

3.2 Mechanical Block Self-Diagnostic Function (B Mode)

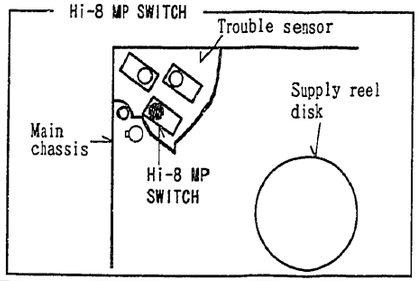
Caution: Complete the A mode before engaging the B mode.

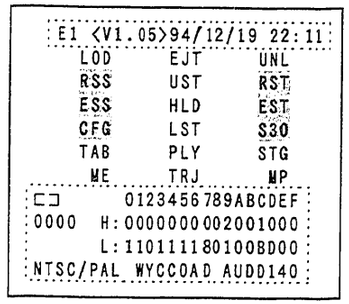
(1) Setting procedure

1) Connect (attach) a power supply (battery).
2) Press the EJECT button to set to the eject state.
3) Press the "Hi8 MP" switch on the trouble sensor and the DATE button and hold them, then set the power switch to "CAMERA" or "VIDEO". (Hold this state for a few seconds.)

[Within 3 seconds]

4) Close the cassette lid.





<Results of self-diagnosis>
* The defective items flash.
* The shaded items are the tape detection switches and cassette holder switch which flash when they are not pressed.
* See Table 3-2 for the results of diagnosis.

Cautions:
* Do not press any buttons other than those specified during self-diagnosis; otherwise, it may cause a malfunction.
* The indications in dotted lines are not covered by the self-diagnostic functions.
* It is normal for the diagnostic procedure to end in the eject state. Do not close the cassette lid thereafter.

[To release]
* Set the power switch to "OFF".

5) The procedure ends in the eject state.

Caution: Do not close the cassette lid.

(2) Results of diagnosis

Table 3-2 summarizes the results of diagnosis and the circuits/parts deemed to be defective in the B mode.

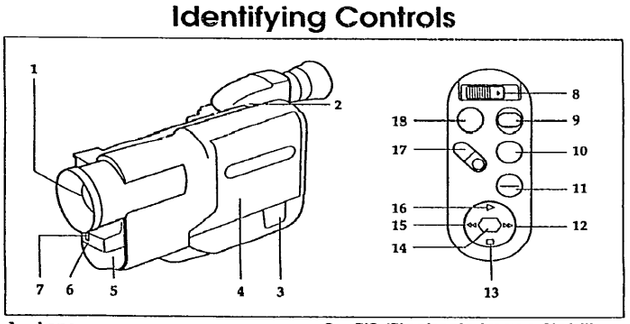
Table 3-2 Results of B Mode Self-Diagnosis (1/2)

Part	Display	Results of diagnosis (Defect display conditions)	Parts/circuits deemed to be defective
Loading motor	LOD	The loading motor is defective when running forward. (Does not load within 10 seconds.)	* Loading motor * Rotation of drive gears in mechanical block faulty * IC0671 * IC0901 * IC0902 * Power supply (S5V, B+) lines
	UND	The loading motor is defective when running in reverse. (Does not unload within 10 seconds.)	
Trouble sensors	RSS	The pulse from the supply reel sensor is defective. (There is one pulse or less within two seconds.)	* Supply reel disk * Trouble sensor (reel sensor) * Capstan motor * IC0901
	RST	The pulse from the take-up reel sensor is defective. (There is one pulse or less within two seconds.)	* Take-up reel disk * Trouble sensor (reel sensor) * Capstan motor * IC0901

Table 3-2 Results of B Mode Self-Diagnosis (2/2)

Part	Display	Results of diagnosis (Defect display conditions)	Parts/circuits deemed to be defective
Trouble sensors	ESS	The pulse from the supply end sensor is defective. (No pulse is input for more than 100 ms continuously within two seconds.)	* Trouble sensors (end sensor/end LED) * Q0905 * IC0901 * DC-DC converter circuit (B+ line)
	EST	The pulse from the take-up end sensor is defective. (No pulse is input for more than 100 ms continuously within two seconds.)	* Trouble sensors (end sensor/end LED) * Q0905 * IC0901 * DC-DC converter circuit (B+ line)
Tape detection switches, etc.	TAB	The erase prevention tab detection switch detects the record inhibit state (OFF).	Caution: These switches flash when they are not pressed. It is abnormal if they flash when pressed. * Trouble sensor * IC0901
	ME	The ME/MP tape detection switch detects the MP state (OFF).	
	MP	The Hi-8 MP tape detection switch detects the normal MP state (OFF).	
	STG	The cassette holder switch detects the state where the cassette holder is not lowered (OFF).	
Capstan motor	CFG	The CAPST. FG pulse is defective. (150 pulses or less within two seconds.)	* Capstan motor * IC0631 * IC0901 * DC-DC converter circuit
Cylinder	S30	The SW30 (CYL. FG) pulse is defective. (No pulse is input normally within two seconds.)	* Cylinder * IC0631 * IC0901 * DC-DC converter circuit
Mechanism mode switch	UST	The unloading stop position detection signal is defective.	Caution: The positions shown on the left are detected in the order described within 10 seconds. * Mechanism mode switch * Trouble sensor * IC0901 * Defective rotation/phase of drive gears in mechanical block * Loading motor * Tape transport components * Guide roller rails * DC-DC converter circuit
	HLD	The half loading position detection signal is defective.	
	LST	The loading stop position detection signal is defective.	
	PLY	The play position detection signal is defective.	
	TRJ	The transient position detection signal is defective.	
	EJT	The eject position detection signal is defective.	

Identifying Controls



1. Lens
F1.6 (4~48mm) 12:1 power zoom lens with auto focus and auto iris functions.

2. Viewfinder BRIGHT, COLOR and TINT controls
Refer to page 9.

3. Cassette Holder Close Button
CAUTION: Be sure to press this button to close the cassette holder. Otherwise, the tape may become slack and may be damaged.

4. Cassette Holder
A power source must be connected to the camcorder before a cassette can be inserted or removed.

5. Microphone

6. Infrared Receiver
The area where infrared signals from the wireless remote are received. Aim the remote control to this area for best results.

7. Record Indicator
This indicator lights when the camcorder is recording.

8. EJECT Switch
A power source must be connected before cassettes can be inserted or removed though the CAM/OFF/VIDEO switch may be set to OFF ("Inserting and Removing Cassettes,"p18).

9. EIS (Electronic Image Stabilizer) Button
EIS corrects slight shaking of an image ("Using the Electronic Image Stabilizer," p. 37).

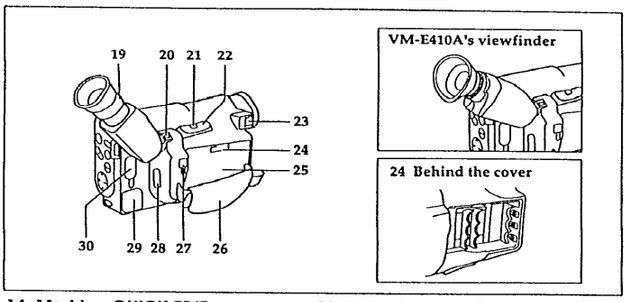
10. 16x9 button
With this button the picture format can be switched from 4:3 (picture format of a normal TV set) to 16:9 (Using 16x9", P39).

11. DATE/TITLE (DISPLAY) Button
Use this button to record the date, time and title on your tape. Any time that the date, time and title displays appear in the viewfinder, they are recorded on your tape. This button can be used instead of DISPLAY button on the remote control in the VIDEO mode.

Note: Be sure to insert the date/title battery before setting the date and time or creating a title.

12. F.F Button
Use this button to fast forward tapes or for visual search. During visual search the camcorder fast forwards at approximately 9 times normal playback speed. Also use this button to set date and time.

13. STOP Button
Use this button to stop playback, fast forward, or reverse. Also use this button to set date and time.



14. Marking QUICK EDIT
Hold down the REW, F.F or PLAY button in the record pause mode; the camcorder enters the rewind, fast forward or play mode (Using Quick Edit", p39).

15. REW BUTTON
Use this button to fast rewind tapes or for visual search. During visual search the camcorder rewinds at approximately 7 times normal playback speed. Also use this button to set date and time. Furthermore, use this button to review the last few seconds of the tape you are recording.

16. PLAY Button
Use to playback recorded tapes.

17. FOCUS Control (AUTO/MAN) Buttons
Press these buttons simultaneously to select manual or automatic focus. For manual focusing ("Using Manual Focus", p. 37), press the F or N buttons to bring the subject into focus. When using manual focus, FOCUS appears in the viewfinder.

18. FADE Button
The FADE button features three modes; white fade, wipe fade, and zoom fade ("Using Fade," p. 38).

19. Diopter Control
To use the electronic viewfinder, turn this control for your optimum focus adjustment.

20. CAM/OFF/VIDEO Power Switch
Hole down the red button as you slide the switch to CAM or VIDEO. You do not need to hold down the red button to slide the switch to OFF.

21. INST. ZOOM (Instant Zoom) Button
Use this button to magnify the image being recorded 1.5 times momentarily.

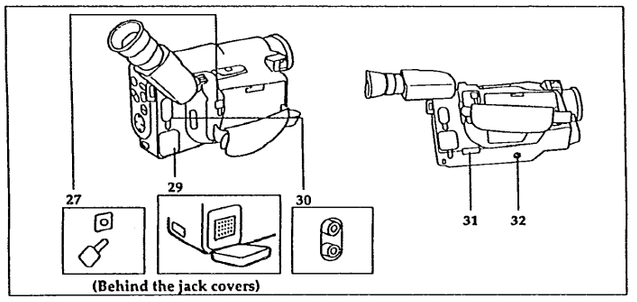
22. Power Zoom Switch
Use this to zoom automatically ("Using the Power Zoom," p 35).

23. Camera Light Shoe
Attach the DC camera light here.

24. OPEN Lever
Use this to open or close the cover of the power supply attachment holder ("Camcorder Batteries", p15).

25. Power Supply Attachment Holder (Behind the cover)
Attach a battery or alkaline batteries here ("Camcorder Batteries", P15).

26. Hand Strap
Refer to page 26.



27. DC IN Jack (Behind the jack cover)
When using the AC adapter/charger, connect one end of the DC cord (provided) to this jack and the other end to the DC OUTPUT jack of the AC adapter/charge.. When using the car battery cord (optional), connect this jack and the DC OUTPUT jack of the car battery cord.

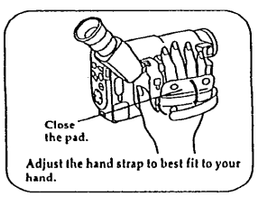
28. Start/Stop Button
When the CAM/OFF/VIDEO switch is in CAM press this button to start recording. When pressed a second time the camera pauses.
During playback use this button to stop the tape temporarily. Pressing a second time resumes normal playback.

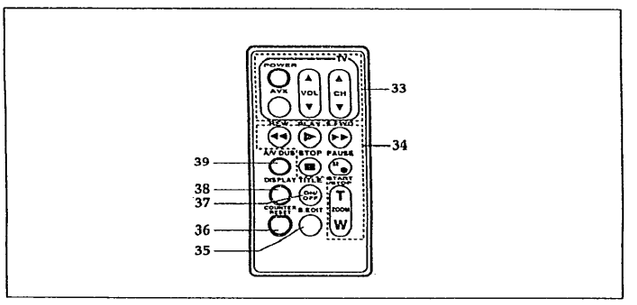
29. AV IN/OUT Jack (Behind the jack cover)
Use this jack to connect the camcorder to a VCR or television ("Playing Back Your Recording," p32, "Using Synchro Edit", P44).

30. AV OUTPUT Jack (Behind the jack cover)
Use this jack to connect the camcorder to a VCR or television ("Playing Back Your Recording," p30,31, "Dubbing from the Camcorder to a VCR," p43 "Recording Television Programs', p48).

31. Date/Title Battery Compartment
Pull the battery holder and install the date/title battery (provided).

32. Tripod Mounting Threaded Socket
Use this threaded socket to mount the camcorder to a tripod.





33. TV Control Buttons
Used for controlling the TV.
- POWER : Turns the TV on and off.
- AVX : Used for recording picture and sound from an auxiliary input.
- VOLUME: Increase (▲) or decrease (▼) the volume.
- CHANNEL : Top (▲) button switches to the next higher channel, bottom (▼) button switches to the next lower channel. For these to operate, you must have preset your channels.

("Controlling your TV with the Camcorder's Remote Control" P45).

34. Recorder's Remote Control
The shaded buttons on the remote control have the same functions as the corresponding buttons on the camcorder.

35. S.EDIT (Synchro Edit) Button (only on the remote control)
Use this button to activate the synchro edit function for dubbing ("Using Synchro Edit", P44).

36. COUNTER RESET Button (only on the remote control)
Use this button to reset the linear time counter to 0:00:00.

37. TITLE ON/OFF Button (only on the remote control)
Use this button to create and record titles for your tapes ("Creating and Recording a Title, "p 40).

38. DISPLAY Button (only on the remote control)
Use this button to select the viewfinder and TV display ("Using the Display Button," p22). When using the date search function, the DATE/TITLE button of the camcorder can also be used instead of this button ("Date Search", P23).

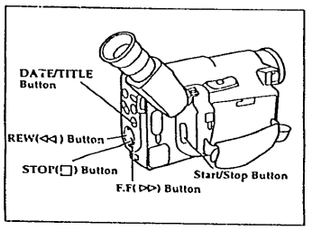
39. A/V DUB Button (only on the remote control)
Use this button to record new audio and video over existing audio and video.

Setting the Date and Time

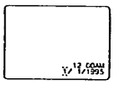
Take the time to set the date and time now. The date and time can be recorded on your tapes to act as a handy reference when viewing them later. Use the following procedure to set up the display for the current date and title.

Note: Be sure to insert the date/title battery before setting the date and time. Although the date and time can be set without the date/title battery inserted, they will disappear when the battery providing power to the camcorder is removed.

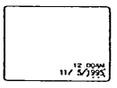
Make sure that the current time is displayed correctly before you start filming.



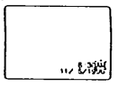
1. Load the battery ("Loading the Batteries: Camcorder batteries" p.15). Press the red button on the CAM/OFF/VIDEO switch as you slide it to CAM.
2. Press the DATE/TITLE button and look into the viewfinder. The date and time should appear in the lower right with the "1" flashing.



3. Pressing the F.F button gives you higher numbers while the REW button gives you lower numbers. Select the right month and press STOP button. Use the F.F, REW and STOP buttons to select the proper day, year, hour, minute, and AM or PM.



4. After setting the AM/PM, press the DATE/TITLE button. The display changes and the internal clock starts.



Note: The date/time graphics will be recorded whenever they appear in the viewfinder.

Correcting the Date and Time

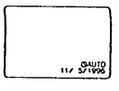
1. Press the DATE/TITLE button while pressing the STOP button. The flashing cursor appears at the month.
2. Move to where you need to make the correction with the STOP button and use the F.F and REW to correct.
3. Press the DATE/TITLE button to set the corrected date and time.

Automatic Date Recording

This feature records the date automatically once a day. After you begin recording, the date is displayed and recorded automatically for 10 seconds. The same date is recorded again in the following cases; when the cassette is replaced, when "◷ AUTO" is displayed again after being switched to the date display and when the recording is less than 10 seconds long.

If the date changes while recording continues over 10 seconds, the date is recorded for 10 seconds when recording is restarted after the camcorder has been set to the standby once.

Press the DATE/TITLE button until "◷ AUTO" and the date appear at the lower right of the viewfinder before you begin to record. The date will be recorded whenever it appears in the viewfinder.

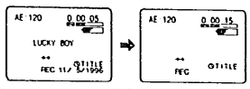


Automatic Title Recording

This function automatically records the created title on the tape together with the date for about 10 seconds after recording is started.

Note: Be sure to insert the date/title battery before starting automatic title recording.

1. Slide the CAM/OFF/VIDEO switch to CAM.
2. Press the DATE/TITLE button to display "◷ TITLE" in the viewfinder. The created title and set date will also appear.
3. Press the start/stop button. The title and date are recorded simultaneously on the tape. 10 seconds after the recording is started, the title and date disappear and the automatic title recording function is released. (Recording will continue.)
4. To end recording, press the start/stop button again.

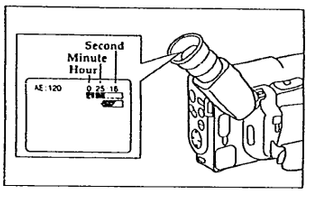


Note: When "◷ TITLE" is displayed in the viewfinder, the title cannot be turned on or off using the remote control. To insert the title during recording, press the DATE/TITLE button on the camcorder so that "◷ TITLE" disappears.

Using the Linear Time Counter

The linear time counter displays the tape run in hours, minutes, and seconds helping you to keep track of how long you've been filming or time you have left to film before running out of tape.

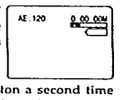
Turn the camcorder on to display the linear time counter. The linear time counter keeps track from when you load a cassette into the camcorder and clears to 0:00:00 when the cassette is ejected.



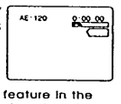
Using the Display Button

Pressing the DISPLAY button on the remote control allows you to switch the displays in the viewfinder. When the camcorder is turned on, the linear time counter appears.

- Pressing the DISPLAY button once displays the linear time counter with the memory feature.



- Pressing the DISPLAY button a second time displays "SEARCH". Refer to next page.
- Pressing the DISPLAY button a third time returns to the linear time counter.



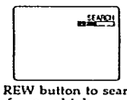
Note: The linear time counter with the memory feature in the viewfinder can also be displayed on the connected television.

Date Search

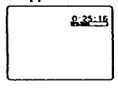
The date search function memorizes the start and end positions of recordings you made on a specific day so you can easily locate those positions later as long as the cassette is left in the camcorder.

Note: Be sure that the date and time is set.

1. Attach a power source and slide the CAM/OFF/VIDEO switch to VIDEO.
2. Press the DATE/TITLE button (DISPLAY on the remote control) to display "SEARCH" in the viewfinder.



3. Press the REW button to search for the start position from which you last made a recording or the F.F button (the F.FWD button on the remote control) to recording end position.
4. When the required position is located, the camcorder enters the stop mode and "SEARCH" disappears from the viewfinder.



Note: If you have ejected the cassette, this function will not operate with that cassette. (When a cassette is inserted and the recording is started, the position is identified as the recording start position on that day.)

Note: If the date/title battery is not inserted, the date search function does not operate when the battery providing the power to the camcorder is removed.

Note: When the cassette was recorded by another camcorder, the date search function does not operate.

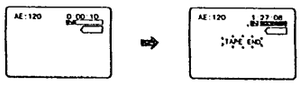
Note: The date search function is released when you press the STOP button during date search mode.

Note: If the recorded time is less than 30 minutes, the date search function may not operate normally.

Remaining Tape

The tape remaining display shows the remaining tape that can be used for recording and playback, using seven dashes. This feature is handy when recording since it lets you know how long you can record on the loaded tape.

Insert a cassette into the camcorder and start recording or playback; 10 seconds later, the remaining tape will be displayed. When the cassette is ejected, the display will disappear. "⊡------" is displayed for 10 seconds after the tape starts to run.



Note: The tape remaining display appears 10 seconds after the tape starts to run.

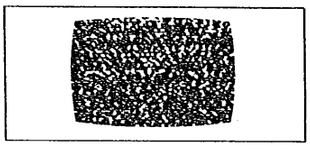
Note: When the remaining tape time becomes less than about three minutes, TAPE END flashes in the viewfinder.

General Maintenance

Cleaning the camcorder Heads

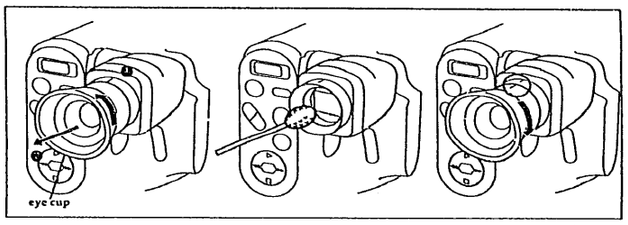
Dirt can accumulate on the video heads on the camera causing the playback picture to become blurred or appear as if video information is lost. This often means that the video heads are dirty. Use a video head cleaner such as a dry type head cleaning tape to clean the heads.

If after cleaning the heads the picture does not clear up consult your nearest dealer or VCR service center for professional head cleaning.



Cleaning the Lens and Picture Tube of the Electronic Viewfinder

The lens of the electronic viewfinder can be user-cleaned if dust, dirt, or other foreign matter adheres to it. For the VM-E410A, perform cleaning in the same way.



1. Rotate and remove eye cup.
2. Clean the picture tube face and lens.
   To prevent scratching, use a soft non abrasive cloth, swab or lens cleaning paper.
3. Align the reference mark and rotate the eye cup in the direction of arrow.

Periodic Maintenance

A precision electromechanical device, the Hitachi VM-E410A/E510A requires maintenance after a period of normal use. We expect that no other maintenance other than head cleaning will be required during the period of warranty unless the camcorder is used either heavily or seldom. Defective parts are covered by the warranty. Normal maintenance is the responsibility of the owner. Consult your dealer or local VCR service center for recommendations regarding normal maintenance based on your use patterns, location, and the age of the camcorder.

Troubleshooting

Quality is very important at Hitachi. We inspect and check every camcorder carefully at the factory under the most rigid quality control and inspection systems. If problems develop please check the following possible solutions before inquiring about professional service.

INSERTING OR REMOVING THE CASSETTE

Symptom	Check Point & Correction
Cassette holder cannot be opened when you slide EJECT switch.	• Connect the power source.
Cassette cannot be inserted into cassette compartment.	• Load cassette in direction indicated by arrow on cassette.
	• Cassette window must be toward outside.

CAMERA RECORDING

Symptom	Check Point & Correction
Picture does not appear in the viewfinder.	• Remove the lens cap.
	• Slide the CAM/OFF/VIDEO switch to CAM.
	• Disconnect the AV input cable from the camcorder.
The camcorder cannot go into the recording mode, even when the start/stop button is pressed.	• Check the record-protect tab on the cassette. See page 19 for details.
	• Push the cassette holder embossed PUSH LOCK to close it.
	• Slide the CAM/OFF/VIDEO switch to CAM.
Picture is out of focus. Auto-focus does not operate.	• Make sure that FOCUS does not appear in the viewfinder. If it is displayed, press FOCUS Control (AUTO/MAN) buttons to erase it.
	• Auto-Focus does not operate if a special-effects filter is attached or the objects shown on page 36 are being recorded.
The created title does not appear.	• Insert the date/title battery, then create a title. • Do not remove the date/title battery after creating a title.

RECORDING TV PROGRAMS OFF

Symptom	Check Point & Correction
The camcorder cannot be set to the recording mode, even when the Start/Stop button on the camcorder is pressed.	• Check the record-protect tab on the cassette. See page 19 for details.
	• Set the CAM/OFF/VIDEO switch to CAM.
	• Connect the camcorder and TV or VCR.

PLAYBACK OF PRE-RECORDED CASSETTE

Symptom	Check Point & Correction
"PLAY" button cannot be engaged.	• Set the CAM/OFF/VIDEO switch to VIDEO.
No picture appears on television screen when "PLAY" button is pressed. (TV is connected to the camcorder by using RF output adapter.)	• Set the television to the camcorder channel (3or4) depending upon the selected channel in the RF channel select switch of RF output adapter.
Interference on playback picture. (TV is connected to the camcorder by using RF output adapter.)	• When you see the playback picture on your TV, adjust fine tuning knob on television set to obtain best picture.
Picture bends at the top of TV screen.	• TV receiver is of older type. It needs to be modified to work properly with camcorder.
	• Tape is damaged. Try another cassette.
Color of your TV screen is too bright, too faint or change.	• TV set has VIR circuit. Turn it off during playback.
No recorded date search	• Slide the CAM/OFF/VIDEO switch to VIDEO. • Insert the date/title battery, set the date and time, then start recording. • Do not remove the date/title battery after recording. • Do not eject the recorded cassette. Leave it in the camcorder.

BATTERY CONDITION

Symptom	Check Point & Correction
The ( ) indication in the electronic viewfinder flashes to indicate battery is discharged.	• Try another battery or charge the battery.

NO OPERATION IS ACCEPTED (WHEN ALKALINE BATTERIES ARE INSERTED)

Symptom	Check Point & Correction
The camcorder does not operate when alkaline batteries are inserted.	• Check that the polarities (+,-) of the batteries are correct. • Insert six batteries.

TAPE DISPLAY

Symptom	Check Point & Correction
TAPE appears in the viewfinder.	• Have you moved the camcorder or cassette from a cold place to a warm place so that its temperature changed abruptly? If the temperature has changed, remove the cassette and set the CAM/OFF/VIDEO switch to OFF, then wait for about one hour. • Remove the cassette and then try to reinsert; remove it several times. If the indication is still shown in the viewfinder, use a cleaning tape to clean the heads and replace the cassette.

VM-E110A/E310A
VM-E410A/E510A

TK No. 6505E

Video & Personal Media Systems Division, Tokai Operatio

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